SLV-L56AR/L76HFAR/L86HFAR

RMT-V247E/V247F

SERVICE MANUAL

Argentina Model

Photo: SLV-L86HFAR

S MECHANISM

Hi-Fi

- **Refer to the SERVICE MANUAL of VHS MECHANICAL ADJUSTMENTS VI for MECHANICAL ADJUSTMENTS. (9-921-647-11)**

* The abbreviations of L56, L76HF and L86HF contained in this service manual are indicated when these models are common to all their corresponding models as given below.

Abbreviated model name	L56	L76HF	L86HF
All model names SLV-	L56AR	L76HFAR	L86HFAR

SPECIFICATIONS

System

Format
- VHS N-PAL, NTSC standard

Channel coverage
- VHF 2 to 13
- UHF 14 to 69
- CATV A-8 to A-1, A to W, W+1 to W+84

Antenna
- 75-ohm antenna terminal for VHF/UHF

Inputs and outputs

LINE IN (SLV-L56 AR only)
- VIDEO IN, phono jack (1)
- Input signal: 1 Vp-p, 75 ohms, unbalanced, sync negative
- AUDIO IN, phono jack (1)
- Input level: 327 mVrms
- Input impedance: more than 47 kilohms

LINE-1 IN (SLV-L76HF AR/L86HF AR only)
- VIDEO IN, phono jack (1)
- Input signal: 1 Vp-p, 75 ohms, unbalanced, sync negative
- AUDIO IN, phono jack (2, L/R)
- Input level: 327 mVrms
- Input impedance: more than 47 kilohms

LINE-2 IN (SLV-L86HF AR only)
- VIDEO IN, phono jack (1)
- Input signal: 1 Vp-p, 75 ohms, unbalanced, sync negative
- AUDIO IN, phono jack (2, L/R)
- Input level: 327 mVrms
- Input impedance: more than 47 kilohms

LINE OUT
- VIDEO OUT, phono jack (1)
- Output signal: 1 Vp-p, 75 ohms, unbalanced, sync negative
- AUDIO OUT, phono jack (SLV-L56 AR: 1, SLV-L76HF AR/L86HF AR: 2, L/R)
- Standard output: 327 mVrms
- Load impedance: 47 kilohms
- Output impedance: less than 10 kilohms

General

Power requirements
- 110 - 240 V AC, 50/60 Hz

Power consumption
- **SLV-L56 AR** 19W
- **SLV-L76HF AR/L86HF AR** 22W

Operating temperature
- 5°C to 40°C

Storage temperature
- –20°C to 60°C

Dimensions
- Approx. 430 × 100 × 286 mm (w/h/d) including projecting parts and controls

Mass
- Approx. 4.2 kg

– Continued on next page –

VHS N-PAL NTSC VIDEO CASSETTE RECORDER

MICROFILM

SONY®

Supplied accessories

Remote commander (1)
Size AA (R6) batteries (2)
75-ohm coaxial cable with F-type connectors (1)

Design and specifications are subject to change without notice.

• **Feature Difference**

SLV- / FEATURE	L56	L76HF	L86HF
HEAD/CH	4/4	4/6	4/6
RCA FRONT LINE IN	×	×	○(3P)
CLICK SHUTTLE	×	×	○
REMOTE COMMANDER RMT-	V247E	V247F	V247F

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

TABLE OF CONTENTS

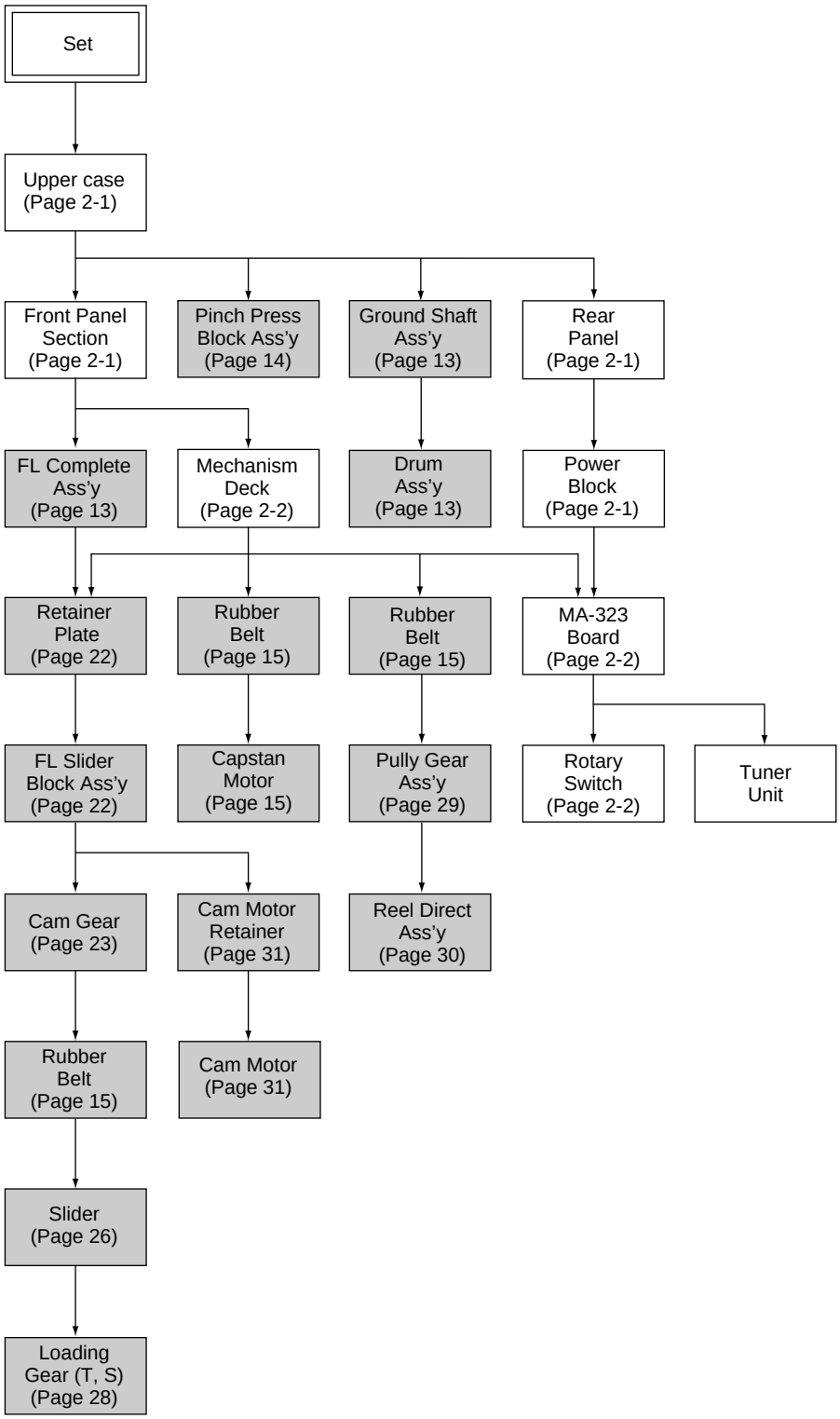
Section	Title	Page
Feature Difference		2
SERVICE NOTE		4
1.	GENERAL	
	Getting Started	1-1
	Basic Operations	1-6
	Additional Operations	1-9
	Editing	1-12
	Additional Information	1-14
2.	DISASSEMBLY	
2-1.	Upper Case Removal	2-1
2-2.	Rear Panel Removal	2-1
2-3.	Power Block Removal	2-1
2-4.	Front Panel Section Removal	2-1
2-5.	Mechanism Deck Removal	2-2
2-6.	MA-323 Board Removal	2-2
2-7.	Internal Views	2-3
2-8.	Circuit Boards Location	2-4
3.	BLOCK DIAGRAMS	
3-1.	Overall Block Diagram	3-1
3-2.	Video (1) Block Diagram	3-4
3-3.	Video (2) Block Diagram	3-5
3-4.	Servo/System Control Block Diagram	3-7
3-5.	Audio Block Diagram	3-9
3-6.	Tuner Block Diagram	3-11
3-7.	Mode Control Block Diagram	3-13
3-8.	Power Block Diagram	3-15
4.	PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS	
4-1.	Frame Schematic Diagram	4-3
4-2.	Printed Wiring Boards and Schematic Diagrams	4-5
	MA-323 Printed Wiring Board	4-5
	MA-323 (Head Amp) Schematic Diagram	4-9
	MA-323 (Video, Audio) Schematic Diagram	4-11
	MA-323 (System Control) Schematic Diagram	4-17
	MA-323 (Servo Control) Schematic Diagram	4-19
	MA-323 (Hi-Fi Audio) Schematic Diagram	4-21
	MA-323 (IO) Schematic Diagram	4-23
	MA-323 (Tuner) Schematic Diagram	4-25
	MA-323 (Mode Control) Schematic Diagram	4-27
	MA-323 (FL Driver) Schematic Diagram	4-29
	MA-323 (Power Supply) Schematic Diagram	4-31
	DM-76, MF-312 Printed wiring Boards and Schematic Diagrams	4-33
	HS-921SF1 Printed Wiring Board	4-35
	HS-921SF1 (Power Supply) Schematic Diagram	4-37
	SR-708 Printed Wiring Board	4-39
	SR-708 (Power Supply) Schematic Diagram	4-41
5.	INTERFACE, IC PIN FUNCTION DESCRIPTION	
5-1.	System Control-Video Block Interface (MA-323 board IC161)	5-1
5-2.	System Control-Servo Peripheral Circuit Interface (MA-323 board IC161)	5-1
5-3.	System Control-Mechanism Block Interface (MA-323 board IC161)	5-2
5-4.	System Control-Audio Block Interface (MA-323 board IC161)	5-3
5-5.	Servo/System/Timer/Tuner Control Microprocessor Pin Function (MA-323 board IC161)	5-4
6.	ERROR CODES	6-1
7.	ADJUSTMENTS	
7-1.	Mechanical Adjustments	7-1
7-2.	Electrical Adjustments	7-1
2-1.	Pre-Adjustment Preparations	7-1
2-1-1.	Instruments to be Used	7-1
2-1-2.	Connection	7-1
2-1-3.	Set-up of Adjustment	7-1
2-1-4.	Alignment Tape	7-1
2-1-5.	Specified I/O Level and Impedance	7-1
2-1-6.	Adjusting Sequence	7-2
2-2.	Power Supply Adjustment	7-2
2-2-1.	Power Supply Check	7-2
2-2-2.	+6V Adjustment	7-2
2-3.	Servo System Adjustment	7-2
2-3-1.	RF Switching Position Adjustment	7-2
2-4.	Audio System Adjustments	7-3
2-4-1.	Hi-Fi Audio System Adjustment	7-3
1.	AF Switching Position Adjustment	7-3
2.	Frequency Response Check	7-3
3.	Overall Level Characteristic and Distortion Factor Check	7-4
4.	Overall S/N Check	7-4
2-4-2.	Normal Audio System Adjustment	7-4
1.	ACE Head Adjustment	7-4
2.	E-E Output Level Check	7-4
3.	Frequency Responce Check	7-4
4.	Overall Level Characteristic and Distortion Factor Check	7-5
5.	Overall S/N Check	7-5
2-5.	Tuner System Adjustment	7-5
2-5-1.	Separation Adjustment	7-5
2-6.	Parts Arrangement Diagram for Adjustments	7-6
8.	REPAIR PARTS LIST	
8-1.	Exploded Views	8-1
8-1-1.	Front Panel and Cabinet Assemblies	8-1
8-1-2.	Chassis Assembly	8-2
8-1-3.	Mechanism Chassis Assembly (1)	8-3
8-1-4.	Mechanism Chassis Assembly (2)	8-4
8-1-5.	Mechanism Chassis Assembly (3)	8-5
8-2.	Electrical Parts List	8-6

SERVICE NOTE

1. DISASSEMBLY

• This set can be disassembled in the order shown below.

Note: Pages in ▭ indicated pages in the SERVICE MANUAL.
Pages in ▭ indicated pages in the VHS MECHANICAL ADJUSTMENT MANUAL VI.


Set
Upper case (Page 2-1)
Front Panel Section (Page 2-1)
Pinch Press Block Ass'y (Page 14)
Ground Shaft Ass'y (Page 13)
Rear Panel (Page 2-1)
FL Complete Ass'y (Page 13)
Mechanism Deck (Page 2-2)
Drum Ass'y (Page 13)
Power Block (Page 2-1)
Retainer Plate (Page 22)
Rubber Belt (Page 15)
Rubber Belt (Page 15)
MA-323 Board (Page 2-2)
FL Slider Block Ass'y (Page 22)
Capstan Motor (Page 15)
Pully Gear Ass'y (Page 29)
Rotary Switch (Page 2-2)
Tuner Unit
Cam Gear (Page 23)
Cam Motor Retainer (Page 31)
Reel Direct Ass'y (Page 30)
Rubber Belt (Page 15)
Cam Motor (Page 31)
Slider (Page 26)
Loading Gear (T, S) (Page 28)

SECTION 1 GENERAL

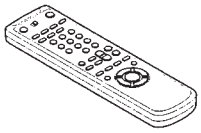
This section is extracted from instruction manual (3-866-973-11).

Step 1

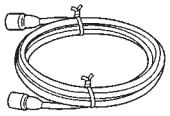
Unpacking

Check that you have received the following items with the VCR:

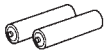
- Remote commander



- 75-ohm coaxial cable with F-type connectors



- Size AA (R6) batteries



Checking your model name

The instructions in this manual are for the 3 models: SLV-L56 AR, SLV-L76HF AR, and SLV-L86HF AR. Check your model number by looking at the rear panel of your VCR. The SLV-L76HF AR is the model used for illustration purposes. Any difference in operation is clearly indicated in the text, for example, "SLV-L86HF AR only."

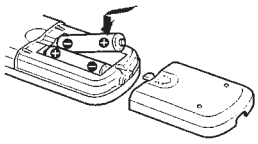
Step 2

Setting up the remote commander

Inserting the batteries

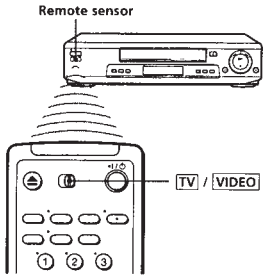
Insert two size AA (R6) batteries by matching the + and – on the batteries to the diagram inside the battery compartment.

Insert the negative (–) end first, then push in and down until the positive (+) end clicks into position.



Using the remote commander

You can use this remote commander to operate this VCR and a Sony TV. Buttons on the remote commander marked with a dot (•) can be used to operate your Sony TV. If the TV does not have the ■ symbol near the remote sensor, this remote commander will not operate the TV.



To operate	Set TV/VIDEO to
the VCR	VIDEO and point at the remote sensor on the VCR
a Sony TV	TV and point at the remote sensor on the TV

Notes

- The TV/VIDEO button selects the input source of the TV from either antenna in or line in. The button does not control this VCR.
- With normal use, the batteries should last about three to six months.
- If you do not use the remote commander for an extended period of time, remove the batteries to avoid possible damage from battery leakage.
- Do not use a new battery with an old one together.
- Do not use different types of batteries together.
- Some buttons may not work with certain Sony TVs.

Step 3

Hookups

Selecting the best hookup option

There are many ways in which your VCR can be hooked up. To hook up your VCR so that it works best for you, first scan through the table below. Then use the accompanying diagrams and procedures on the following pages to set up your VCR.

If you have	Use	Refer to
TV that has audio/video input	**Audio/video (A/V) hookup,** then follow one of the hookups below.	**Pages 7 and 8**
Antenna only, no cable TV	**Hookup 1**	**Page 9**
Cable box with many scrambled channels	**Hookup 2**	**Page 10**
No cable box, or cable box with only a few scrambled channels	**Hookup 3**	**Page 11**
Cable box with only a few scrambled channels, using an A/B switch	**Hookup 4**	**Page 12**

After you've completed the connections, follow the instructions for setup.

After you've completed the setup, you're ready to use your VCR.

Before you get started

- Turn off the power to all equipment.
- Do not connect the AC power cords until all of the connections are completed.
- Be sure you make connections firmly. Loose connections may cause picture distortion.
- If your TV doesn't match any of the examples provided, see your nearest Sony dealer or qualified technician.

Audio/video (A/V) hookup — Pages 7 and 8

If your TV has audio/video (A/V) input jacks, you will get a better picture and sound if you hook up your VCR using these connections. If your TV doesn't have A/V inputs, see the following pages for antenna or cable hookups.

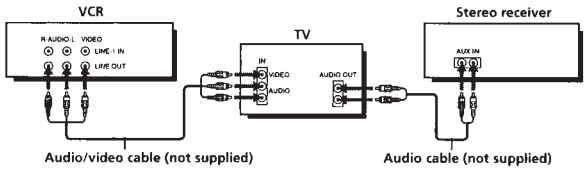
If you're not planning to use your VCR to record programs, you're finished setting up the VCR after you've made the connections shown on pages 7 and 8.

If you want to record off-air or off your cable TV system, complete these connections first, and then go to the following pages for antenna or cable hookups.

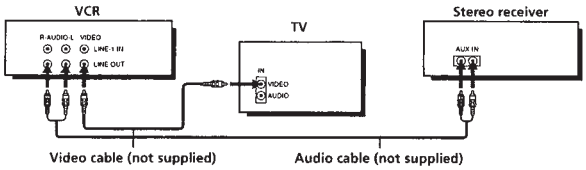
For SLV-L76HF AR and L86HF AR

For a true "home theater" experience, you should connect the audio outputs of your VCR or TV to your stereo system.

A Use this hookup if your TV has stereo jacks



B Use this hookup if your TV doesn't have stereo jacks



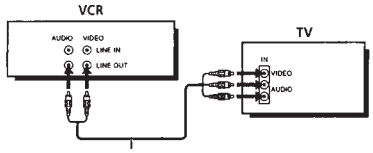
Notes

- To play a tape in stereo, you must use the A/V connection.
- If you use the Trinitron TV Synchro Play function (see page 28), the A/V connection is necessary. (If your TV has two or more inputs, connect the audio/video cable to the VIDEO-1 IN jacks.)

continued

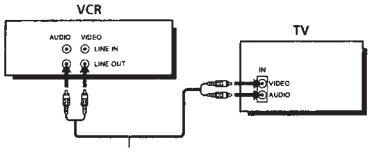
For SLV-L56 AR

A Use this hookup if your TV has stereo jacks



Audio/video cable (not supplied)

B Use this hookup if your TV doesn't have stereo jacks



Audio/video cable (not supplied)

Note

- If you use the Trinitron TV Synchro Play function (see page 28), the A/V connection is necessary. (If your TV has two or more inputs, connect the audio/video cable to the VIDEO-1 IN jacks.)

Hookup 1

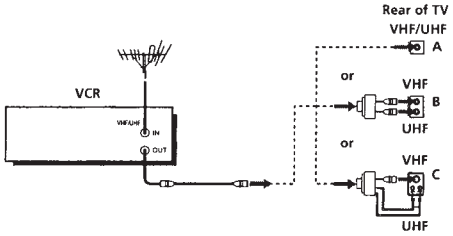
Page 9

Antenna hookup

Make the following connections if you're using an antenna (if you don't have cable TV).

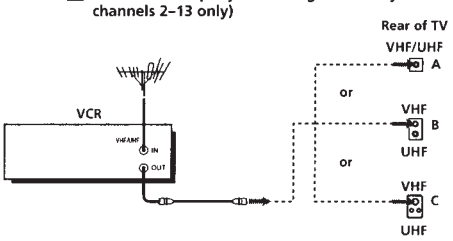
A Use this hookup if you're using:

- VHF/UHF antenna (you get channels 2–13 and channels 14 and higher)
- UHF-only antenna (you get channels 14 and higher)
- Separate VHF and UHF antennas



Match the type of connector on your TV: A, B, or C.

B Use this hookup if you're using a VHF-only antenna (you get channels 2–13 only)



Match the type of connector on your TV: A, B, or C.

For connector types B and C, no UHF connection is required.

If you cannot connect your antenna cable to the VCR directly

If your antenna cable is a flat cable (300-ohm twin lead cable), attach an external antenna connector (not supplied) so you can connect the cable to the VHF/UHF IN connector. If you have separate cables for VHF and UHF antennas, you should use a U/V band mixer (not supplied).

continued

Hookup 2

Page 10

Cable box with many scrambled channels

Recommended use

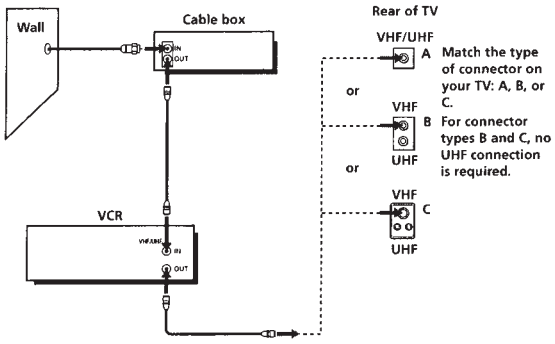
Use this hookup if your cable system scrambles all or most channels.

What you can do with this hookup

- Record any channel by selecting the channel on the cable box

What you can't do

- Record one channel while watching another channel



Match the type of connector on your TV: A, B, or C.

For connector types B and C, no UHF connection is required.

Hookup 3

Page 11

No cable box, or cable box with only a few scrambled channels

Recommended use

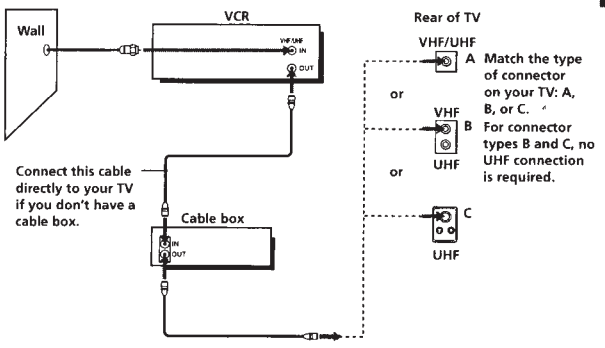
Use this hookup if you do not have a cable box. Also use this hookup if your cable system scrambles only a few channels.

What you can do with this hookup

- Record any unscrambled channel by selecting the channel on the VCR

What you can't do

- Record scrambled channels that require a cable box



Match the type of connector on your TV: A, B, or C.

For connector types B and C, no UHF connection is required.

continued

Hookup 4

Page 12

Cable box with only a few scrambled channels, using an A/B switch

Recommended use

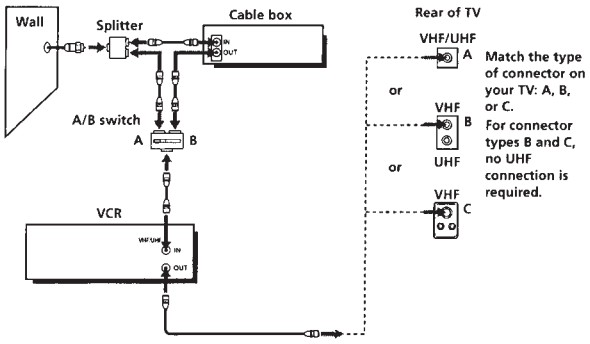
By using an A/B switch (not supplied), this hookup allows you to record both scrambled and unscrambled channels conveniently.

What you can do with this hookup

- Record any unscrambled channel by selecting the channel directly on the VCR (the A/B switch is set to A)
- Record any scrambled channel by selecting the channel on the cable box (the A/B switch is set to B)

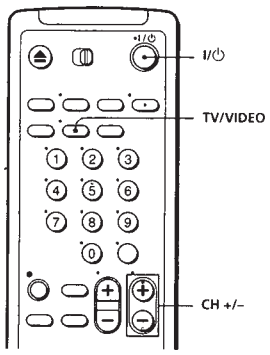
What you can't do

- Record one scrambled channel while watching another channel (the A/B switch is set to B)



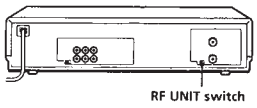
Step 4

Setting the RF unit



When connecting the VCR to the TV using only the antenna cable, you must set the RF UNIT switch on the rear of the VCR so that the TV can receive the correct signal from the VCR.

If you made A/V connections (pages 7 and 8), you can skip this step.



1 RF UNIT CH3 CH4 — Set the RF UNIT switch on the rear of the VCR to CH3 or CH4, whichever channel is not used in your area. If both are used, set the switch to either channel.

2 •I/⏻ — Press I/⏻ to turn on the VCR.

3 •TV/VIDEO — Press TV/VIDEO to display the VIDEO indicator in the display window.

4 •CH — Press CH +/– to display a channel number in the display window. Select an active channel number in your area.

continued

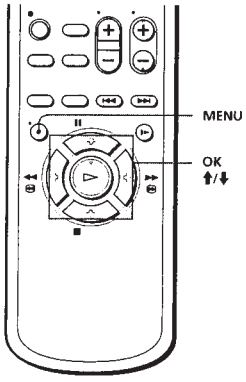
5 Turn on your TV and set it to the channel you selected in step 1 (channel 3 or 4).

The selected TV channel broadcast appears on the TV screen. If the channels change when you press CH +/–, you have made the correct setting.

Whenever you use the VCR, set the TV to the channel selected in step 1.

Step 5

Selecting a language

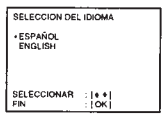


You can change the on-screen display language from Spanish to English.

Before you start...

- Turn on the VCR and the TV.
- Set the TV to the VCR channel (channel 3 or 4). If your TV is connected to the VCR using A/V connections, set the TV to video input.
- Press TV/VIDEO to display the VIDEO indicator in the display window.

1 •MENU — Press MENU, then press ↑/↓ to move the cursor (▶) to SELECCION DEL IDIOMA and press OK.



2 Press ↑/↓ to select the desired language, then press OK.

Note

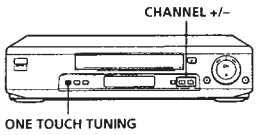
- The menu disappears automatically if you don't proceed for more than a few minutes.

Step 6

Presenting channels

First, we recommend that you preset the receivable channels in your area using the One Touch Tuning function. If the One Touch Tuning function could not preset the channels correctly, you can preset them automatically using the menu. Then, if some channels could not be preset automatically, set them manually; if there are any unwanted channels among the preset ones, you can disable the channels.

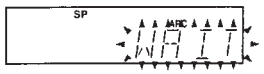
Presetting all receivable channels using the One Touch Tuning function



ONE TOUCH TUNING

Press ONE TOUCH TUNING on the VCR for more than three seconds.

The VCR starts the channel presetting.



The WAIT indicator goes off when all receivable channels are preset.

To check if the channels are preset correctly

Set the TV to the video channel and press CHANNEL +/– on the VCR. If the TV screen changes to a different program each time you press CHANNEL +/–, the channels are preset correctly.

Tip

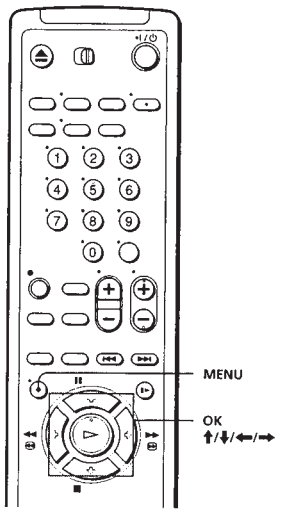
- To stop the One Touch Tuning function, press ONE TOUCH TUNING or ■ STOP on the VCR during the setting.

Presetting all receivable channels automatically

If you have preset the channels using the One Touch Tuning function, skip this procedure.

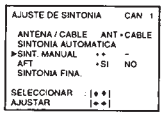
Before you start...

- Turn on the VCR and the TV.
- Set the TV to the VCR channel (channel 3 or 4). If your TV is connected to the VCR using A/V connections, set the TV to video input.
- Press TV/VIDEO to display the VIDEO indicator in the display window.



1 • MENU

Press MENU, then press ↑/↓ to move the cursor (▶) to AJUSTE DE SINTONIA and press OK.



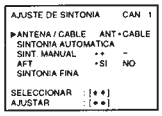
continued

Step 6: Presetting channels (continued)

2 Press ↑/↓ to select ANTENA/CABLE.

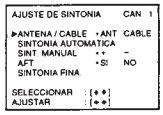
3 • To preset cable TV channels:

Press ←/→ to set ANTENA/CABLE to CABLE.



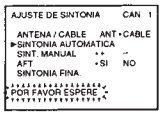
• To preset VHF and UHF channels:

Press ←/→ to set ANTENA/CABLE to ANT.



4 Press ↑/↓ to move the cursor (▶) to SINTONIA AUTOMATICA, then press OK.

All receivable channels are preset in numerical order. When no more receivable channels can be found, presetting stops and the picture from the lowest numbered channel is displayed on the TV screen.



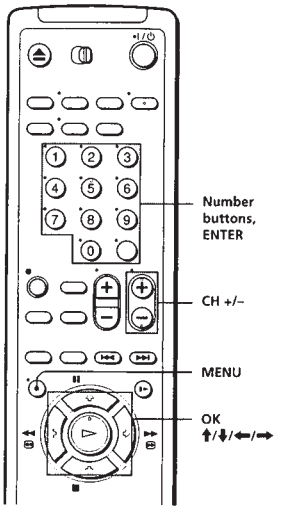
Note

- The menu disappears automatically if you don't proceed for more than a few minutes.

Presetting/disabling channels manually

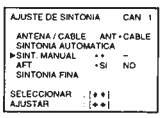
Before you start...

- Turn on the VCR and the TV.
- Set the TV to the VCR channel (channel 3 or 4). If your TV is connected to the VCR using A/V connections, set the TV to video input.
- Press TV/VIDEO to display the VIDEO indicator in the display window.



1 • MENU

Press MENU, then press ↑/↓ to move the cursor (▶) to AJUSTE DE SINTONIA and press OK.



continued

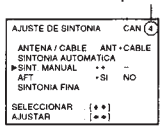
Step 6: Presetting channels (continued)

2

- To preset a channel:

Channel to be preset

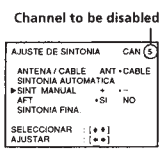
1 Press the number buttons to enter the channel number, then press ENTER.
2 Press ←/→ to set SINT. MANUAL to +.


AJUSTE DE SINTONIA CAN 4
ANTENA / CABLE ANT • CABLE
SINTONIA AUTOMATICA
▶SINT. MANUAL • + –
AFT • SI NO
SINTONIA FINA
SELECCIONAR : [• •]
AJUSTAR : [• •]

- To disable a channel:

Channel to be disabled

1 Press CH +/– to select the channel number.
2 Press ←/→ to set SINT. MANUAL to –.



3

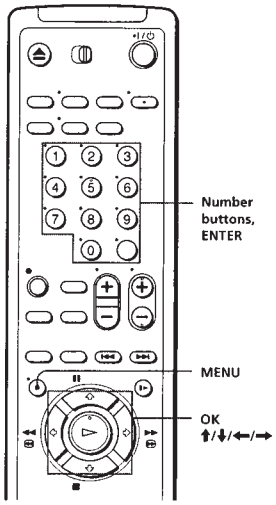
Repeat step 2 to preset or disable channels as required, then press OK.

Note

- The menu disappears automatically if you don't proceed for more than a few minutes.

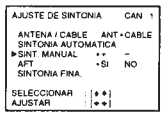
If the picture is not clear

Normally, the Auto Fine Tuning (AFT) function automatically tunes in channels clearly. If, however, the picture of a channel is not clear, you can also use the manual tuning function.



1

Press MENU, then press ↑/↓ to move the cursor (▶) to AJUSTE DE SINTONIA and press OK.


AJUSTE DE SINTONIA CAN 1
ANTENA / CABLE ANT • CABLE
SINTONIA AUTOMATICA
▶SINT. MANUAL • + –
AFT • SI NO
SINTONIA FINA.
SELECCIONAR : [• •]
AJUSTAR : [• •]

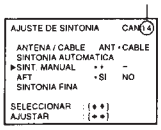
continued

Step 6: Presetting channels (continued)

2

Press the number buttons to select the channel you want to fine-tune, then press ENTER.

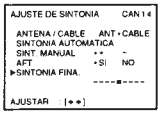
Selected channel


AJUSTE DE SINTONIA CAN 14
ANTENA / CABLE ANT • CABLE
SINTONIA AUTOMATICA
▶SINT. MANUAL • + –
AFT • SI NO
SINTONIA FINA
SELECCIONAR : [• •]
AJUSTAR : [• •]

3

Press ↑/↓ to move the cursor (▶) to SINTONIA FINA.

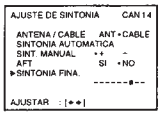
The fine tuning meter appears.



4

Press ←/→ to adjust to a clearer picture, then press OK.

Note that the AFT setting switches to NO.



Tip

- To select the channel in step 2 above, you can also use the CH +/– buttons. In this case, you don't need to press ENTER.

Note

- The menu disappears automatically if you don't proceed for more than a few minutes.

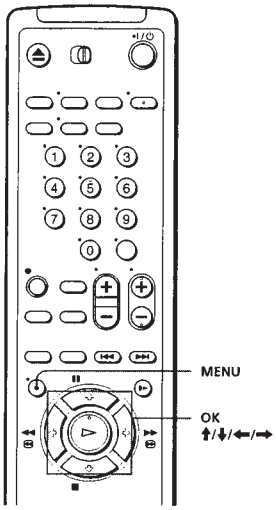
Step 7

Setting the clock

You must set the time and date on the VCR to use the timer recording features properly.

Before you start...

- Turn on the VCR and the TV.
- Set the TV to the VCR channel (channel 3 or 4). If your TV is connected to the VCR using A/V connections, set the TV to video input.
- Press TV/VIDEO to display the VIDEO indicator in the display window.



1

Press MENU, then press ↑/↓ to move the cursor (▶) to AJUSTE DEL RELOJ and press OK.

2

Press ↑/↓ to set the date.

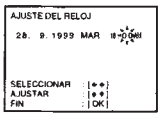
continued

Step 7: Setting the clock (continued)

3 Press ➡ to select the month and set the month pressing ↑/↓.

4 Set the year, hour, and minutes in sequence, pressing ➡ to select the item to be set, and ↑/↓ to select the digits.

The day of the week is set automatically.



5 Press OK to start the clock.

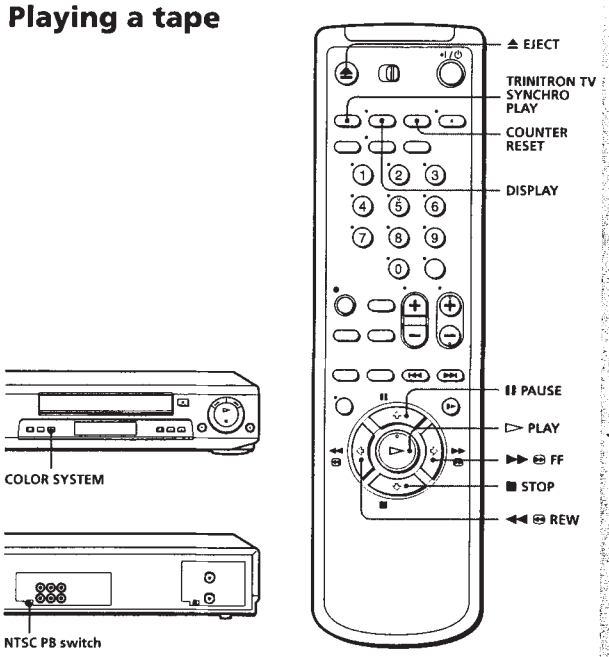
Tip

- To change the digits during the setting, press ⬅ to return to the item to be changed, and select the digits by pressing ↑/↓.

Note

- The menu disappears automatically if you don't proceed for more than a few minutes.

Playing a tape



1 Turn on your TV and set it to the video channel.

2 Insert a tape.

The VCR turns on and starts playing automatically if you insert a tape with its safety tab removed.

continued

Playing a tape (continued)

3 Press ▷ PLAY.

When the tape reaches the end, it will rewind automatically.

Additional tasks

To	Press
Stop play	■ STOP
Pause play	II PAUSE
Resume play after pause	II PAUSE or ▷ PLAY
Fast-forward the tape	▶▶ FF during stop
Rewind the tape	◀◀ REW during stop
Eject the tape	⏏ EJECT

To set the color system

If streaks appear during playback, press COLOR SYSTEM on the VCR to conform to the system that the tape was recorded in. (Normally, the color system is correctly set whenever the tape is inserted.)

If your tape was recorded in	Press COLOR SYSTEM until the indicator below appears in the display window.
PAL-N	PAL
NTSC	NTSC

To play an NTSC-recorded tape

Set NTSC PB at the rear of the VCR according to the color system of your TV.

If your TV is	Set NTSC PB to
PAL-N	ON PAL-N TV
NTSC 3.58	NTSC 3.58

To use the time counter

At the point on the tape that you want to find later, press COUNTER RESET. The counter in the display window resets to "0:00:00." Search for the point afterwards by referring to the counter.

To display the counter on the TV screen, press DISPLAY.

Notes

- The counter resets to "0:00:00" whenever a tape is re-inserted.
- The counter stops counting when it comes to a portion with no recording.
- If a tape has portions recorded in both PAL-N and NTSC systems, the time counter reading will not be correct. This is due to the difference between the counting cycles of the two color systems.
- Depending on your TV, the following may occur while playing an NTSC-recorded tape:
  - the picture becomes black and white,
  - the picture shakes,
  - no picture appears on the TV screen,
  - black streaks appear horizontally on the TV screen,
  - the color density increases or decreases.
- Tapes recorded on other VCRs in the LP mode of NTSC system can be played back on this VCR, but the picture quality cannot be guaranteed.
- While setting the menu on the TV screen, you cannot use the ▷ PLAY, II PAUSE, ▶▶ FF, ◀◀ REW, or ■ STOP button.

continued

Playing a tape (continued)

Turning on the VCR and TV, and starting playback automatically (Trinitron TV Synchro Play)

You can only use this function if your TV is made by Sony (Trinitron TV).

How to connect to use this function

Connect the VCR and TV with the audio/video cable. (See "Audio/video (A/V) hookup" on pages 7 and 8.) Be sure to connect the audio/video cable to the VIDEO-1 IN jacks on the TV if the TV has two inputs or more. The TV must be placed where it will respond to the remote commander while you are pointing it at the VCR.

Operation

Make sure that the TV's power is in standby mode.

Press TRINITRON TV SYNCHRO PLAY and hold the remote commander in place for about two seconds.

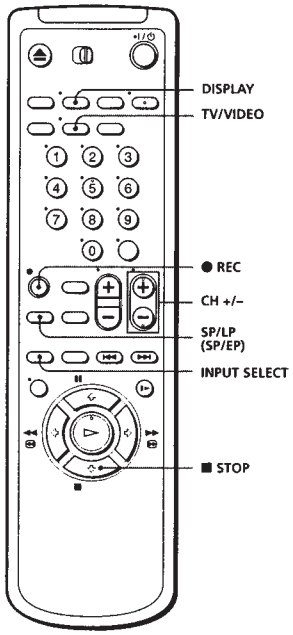
The VCR and TV turn on, and the TV is set to the channel for the VCR. If there is a tape in the VCR, playback starts automatically.

Notes

- If the Trinitron TV Synchro Play function does not work properly:
  - Wait a few moments, and press the button again.
  - Replace both of the batteries with new ones, and press the button again.

  Note that this function may not operate some Sony TVs because of the remote commander's signal limitations.
- Do not press TRINITRON TV SYNCHRO PLAY while playing back a video tape. If you do so, the TV's input source will momentarily switch to the TV's tuner.

Recording TV programs



1 Turn on your TV and set it to the video channel.

2 Insert a tape with its safety tab in place.

continued

Recording TV programs (continued)

3 • CH

Press CH +/– to select the channel you want to record.

4 SP/LP (SP/EP)

Press SP/LP (SP/EP) to select the tape speed, SP or LP.

LP (Long Play) provides recording time twice as long as SP (Standard Play), however, SP produces better picture and audio quality.

5 ●REC

Press ● REC to start recording.

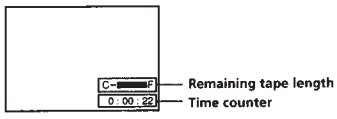
The recording indicator lights up red in the display window.

To stop recording

Press ■ STOP.

To check the remaining tape length

Press DISPLAY. The white bar indicates the approximate length of tape remaining.



To watch another TV program while recording

1. Press TV/VIDEO to turn off the VIDEO indicator in the display window.
2. If the TV is connected to the VCR using an audio/video cable, set the TV to TV input. If the TV is connected to the VCR using only the antenna cable, skip this step.
3. Select another channel on the TV.

To save a recording

To prevent accidental erasure, break off the safety tab as illustrated. To record on the tape again, cover the tab hole with adhesive tape.

To record NTSC color system program

NTSC color signals can be recorded on this VCR from the LINE IN (SLV-L56 AR only), LINE-1 IN (SLV-L76HF AR/L86HF AR only), and LINE-2 IN (SLV-L86HF AR only) jacks only.

To select the line input, press INPUT SELECT or CH +/– so that "L" (SLV-L56 AR only), "L1" (SLV-L76HF AR/L86HF AR only), or "L2" (SLV-L86HF AR only) appears in the display window.

For tape speed, select SP or EP in step 4.
EP (Extra Play) provides recording time three times as long as SP, however, SP produces better picture and audio quality.

When playing back, the VCR automatically detects the tape speed.

continued

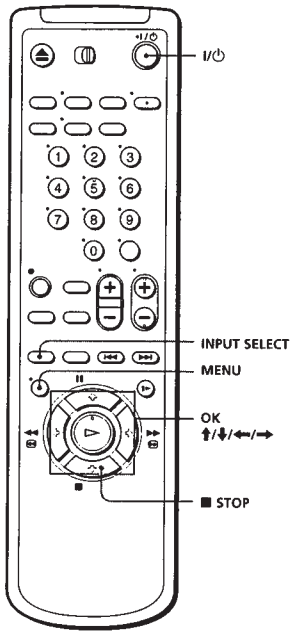
Tips

- To select a channel, you can use the number buttons on the remote commander. Enter the channel number, then press ENTER.
- You can select a video source from the LINE IN (SLV-L56 AR only), LINE-1 IN (SLV-L76HF AR/L86HF AR only), or LINE-2 IN (SLV-L86HF AR only) jacks using the INPUT SELECT or CH +/– buttons.
- The display appears on the TV screen indicating information about the tape, but the information won't be recorded on the tape.
- If you don't want to watch TV while recording, you can turn off the TV.

Notes

- The display doesn't appear during still (pause) mode or slow-motion playback.
- If a tape has portions recorded in both PAL-N and NTSC systems, the time counter reading will not be correct. This discrepancy is due to the difference between the counting cycles of the two color systems.
- When you insert a non-standard commercially available tape, the remaining time may not be correct.
- It may take up to one minute for the VCR to calculate and display the remaining tape length after you press DISPLAY.

Recording TV programs using the timer



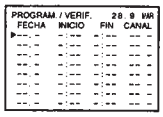
You can preset up to eight programs at a time.

Before you start...

- Check that the VCR clock is set to the correct time.
- Insert a tape with its safety tab in place. Make sure the tape is longer than the total recording time.
- Turn on your TV and set it to the video channel.

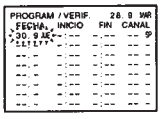
1 • MENU

Press MENU and select PROGRAM./VERIF., then press OK.



continued

2 Set the date, start and stop times, channel number, and tape speed:



1 Press ➡ to select each item in turn.
2 Press ↑/↓ to set each item.
To correct a setting, press ⬅ to return to that setting and reset.

To record the same program every day or the same day every week, press ↓ while the date is flashing. For details, see "Daily/weekly recording" on page 35.

INPUT SELECT

To record from a source connected to the LINE IN (SLV-L56 AR only), LINE-1 IN (SLV-L76HF AR/L86HF AR only), or LINE-2 IN (SLV-L86HF AR only) jacks, press INPUT SELECT to display "L" (SLV-L56 AR only), "L1" (SLV-L76HF AR/L86HF AR only), or "L2" (SLV-L86HF AR only) in the "CANAL" position.

3 Press ➡ to confirm the setting.

The cursor (▶) appears at the beginning of the line. To enter another setting, move the cursor to the next line and repeat step 2.

4 Press OK.

5 • I/⏻

Press I/⏻ to turn off the VCR.

The ⏲ indicator appears in the display window and the VCR stands by for recording.

To record from other equipment, leave the connected equipment switched on.

To stop recording

To stop the VCR while recording, press ■ STOP.

Daily/weekly recording

In step 2 above, press ↓ to select the recording pattern. Each time you press ↓, the indication changes as shown below. Press ↑ to change the indication in reverse order.

the current date → DOM-SAB (Sunday to Saturday) → LUN-SAB (Monday to Saturday) → LUN-VIE (Monday to Friday) → TODOS SAB (every Saturday) → ..... → TODOS LUN (every Monday) → TODOS DOM (every Sunday) → 1 month later → (dates count down) → the current date

To use the VCR after setting the timer

To use the VCR before a timer recording begins, just press I/⏻. The ⏲ indicator turns off and the VCR switches on. Remember to press I/⏻ to reset the VCR in timer recording standby after using the VCR.

You can also do the following tasks while the VCR is recording:

- Reset the counter.
- Display tape information on the TV screen.
- Check the timer settings.
- Watch another TV program.

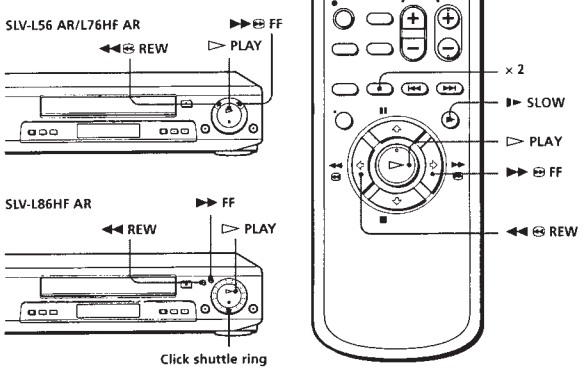
Tips

- To set the channel, you can also use the CH +/– or number buttons.
- To set the tape speed, you can also use the SP/LP (SP/EP) button.

Note

- The ⏲ indicator flashes in the display window when you press I/⏻ with no tape inserted.

Playing/searching at various speeds



Playback options	Operation
View the picture during fast-forward or rewind	During fast-forward, hold down ▶▶⊟ FF/▶▶ FF. During rewind, hold down ◀◀⊟ REW/◀◀ REW.
Play at high speed	• During playback, press ▶▶⊟ FF or ◀◀⊟ REW on the remote commander. • During playback, hold down ▶▶⊟ FF/▶▶ FF or ◀◀⊟ REW/◀◀ REW. When you release the button, normal playback resumes.
Play at twice the normal speed	During playback or pause, press × 2.
Play in slow motion for two minutes	During playback or pause, press ▮▶ SLOW.
Play frame by frame	During pause, press ▶▶⊟ FF or ◀◀⊟ REW on the remote commander. Hold down ▶▶⊟ FF or ◀◀⊟ REW to play one frame each second.
Rewind and start play	During stop, press ▷ PLAY on the VCR while holding down ◀◀⊟ REW/◀◀ REW on the VCR.

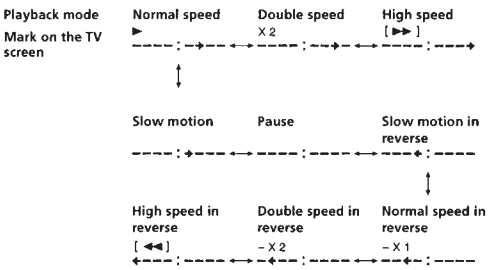
To resume normal playback

Press ▷ PLAY.

Using the click shuttle ring (SLV-L86HF AR only)

With the click shuttle ring, you can operate a variety of playback options.

During playback or pause, turn the click shuttle ring clockwise or counterclockwise. Each change in the click shuttle ring position changes the playback mode, and the corresponding mark appears on the TV screen for a few seconds in the following way if the on-screen display function is on.



Tip

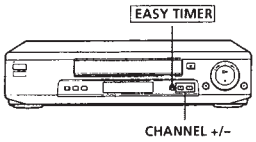
- Adjust the picture using the TRACKING +/– buttons on the VCR if:
  - streaks appear while playing in slow motion.
  - bands appear at the top or bottom while pausing.
  - the picture shakes while pausing.

  To set tracking to the center position, press both buttons (+/–) at the same time.

Notes

- The playback sound is muted during these operations.
- In LP or EP mode, noise may appear or there may be no color.
- If the playback mode mark doesn't appear on the TV screen, press DISPLAY.
- The playback mode mark may shake while playing or searching at various speeds.
- The picture may have snow when playing at high speed in reverse.

Recording a TV program using the Easy Timer function



The Easy Timer function allows you to make a timer recording of a program without turning on your TV. Set the recording timer to record only one program that will be broadcast within the next 24 hours using the EASY TIMER button.

Before you start...

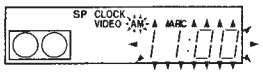
- Insert a tape with its safety tab in place. Make sure the tape is longer than the total recording time.
- If you want to see the setting on the TV screen, turn on the TV and set it to the video channel.

1 Press EASY TIMER.

The CLOCK indicator appears and the current time flashes in the display window. If the clock has not been set, or has been cleared, "–:– –" flashes.

2 Press CHANNEL +/– to set the current time, if necessary. If the clock has already been set correctly, skip this step.

Holding down CHANNEL +/– changes the time in increments of 15 minutes.

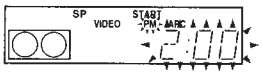


3 Press EASY TIMER to confirm the clock setting.

The START indicator appears and the recording start time flashes in the display window.

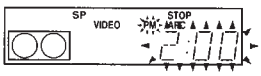
4 Press CHANNEL +/– to set the recording start time.

Holding down CHANNEL +/– changes the time in increments of 15 minutes.



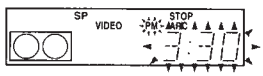
5 Press EASY TIMER.

The STOP indicator appears and the recording stop time flashes in the display window.



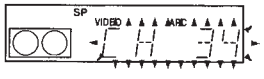
6 Press CHANNEL +/– to set the recording stop time.

Holding down CHANNEL +/– changes the time in increments of 15 minutes.



7 Press EASY TIMER.

A channel number flashes.

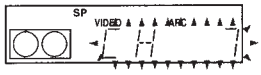


continued

Recording a TV program using the Easy Timer function (continued)

8 Press CHANNEL +/– to set the channel.

To record from a source connected to the LINE IN (SLV-L56 AR only), LINE-1 IN (SLV-L76HF AR/L86HF AR only), or LINE-2 IN (SLV-L86HF AR only) jacks, press INPUT SELECT to display "L" (SLV-L56 AR only), "L1" (SLV-L76HF AR/L86HF AR only), or "L2" (SLV-L86HF AR only).



9 Press EASY TIMER to complete the setting.

The ⏲ indicator appears in the display window and the VCR stands by for recording.

To set the timer using the remote commander

You can also use the remote commander to set the Easy Timer.

1 Press EASY TIMER.

2 Set the clock (if necessary), recording start and stop times, and channel.

To set each item, press CH +/– or the number buttons, then press EASY TIMER to go to the next setting.

For example, to set the clock or recording start or stop time to "3:30 PM" using the number buttons, press 0, 3, 3, and 0 in sequence, then press ENTER (AM/PM) to set PM.

To stop recording

To stop the VCR while recording, press ■ STOP.

To check or change the timer setting

Press EASY TIMER repeatedly until the setting you want to check or change flashes. Then re-enter the new setting, if necessary. If you do not want to change any of the settings, press EASY TIMER repeatedly until the ⏲ indicator appears in the display window.

You can also change the timer setting using the PROGRAM./VERIF. menu. For details, see page 43.

Tips

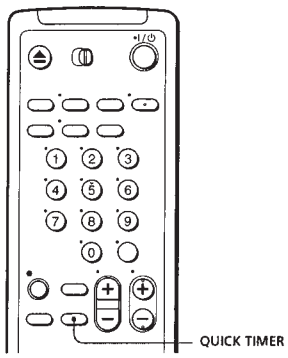
- The program is recorded in the current tape speed mode. To change the tape speed, press SP/LP (SP/EP) before you complete the setting in step 8.
- If you make a mistake when entering the time with the number buttons, complete the operation entering the four digits, then re-enter the time. Then press EASY TIMER to confirm the setting.
- To cancel the Easy Timer setting, press CLEAR on the remote commander or press CHANNEL + and – on the VCR at the same time during any of the Easy Timer settings. Note that the cancelation can only be done after clock setting mode.

Notes

- You cannot set the recording program using the Easy Timer function if eight programs have already been set using the PROGRAM./VERIF. menu.
- You can set the timer for only one program using the Easy Timer function. If you want to set the timer for another program, use the PROGRAM./VERIF. menu. For details, see page 33.
- You cannot set the date using the Easy Timer function. Set the date using the AJUSTE DEL RELOJ menu if you want to set the timer with the PROGRAM./VERIF. menu. For details, see page 23.
- The ⏲ indicator flashes in the display window when you complete the setting in step 9 with no tape inserted.

Recording TV programs using the quick timer

After recording is started in the normal way, you can have the VCR stop recording automatically after a specified duration.

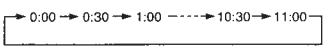


1 While recording, press QUICK TIMER once.

The ⏲ indicator appears in the display window.

2 Press QUICK TIMER repeatedly to set the duration.

Each press advances the time in increments of 30 minutes.



The duration decreases minute by minute to 0:00, then the VCR stops recording and turns off automatically.

To extend the duration

Press QUICK TIMER repeatedly to set to the new duration.

To stop recording

To stop the VCR while recording, press ■ STOP.

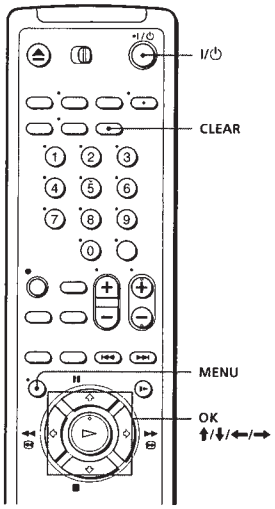
Using the quick timer during stop mode

You can set the quick timer and start recording during stop mode by pressing QUICK TIMER. To set the channel, you can use the CH +/– or INPUT SELECT buttons. Press QUICK TIMER repeatedly to set the recording duration. The recording will start automatically.

Checking/ changing/ canceling timer settings

Before you start...

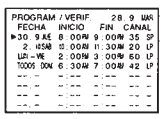
- Turn on your TV and set it to the video channel.



1 Press I/⏻ to turn on the VCR.

2 Press MENU, then press ↑/↓ to select PROGRAM./VERIF.:

- If you want to change or cancel a setting, go on to the next step.
- If you do not need to change or cancel the settings, press OK, then turn off the VCR to return to recording standby.


PROGRAM / VERIF. 28 . 9 MA
FECHA INICIO FIN CANAL
▶30 . 9 AE 8 :00N 9 :00N 35 SP
2 . MSM 10 :00N 11 :30N 20 LP
LUN-VIE 2 :00N 3 :00N 60 LP
TODOS DON 6 :30N 7 :00N 42 LP

continued

3 Press ↑/↓ to select the setting you want to change or cancel:

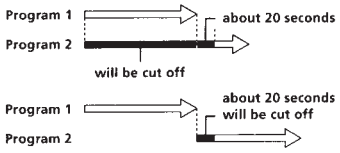
- To change the setting, press ←/→ to select the item you want to change, and press ↑/↓ to reset it. Then, press → repeatedly until the cursor (▶) appears at the beginning of the line.
- To cancel the setting, press CLEAR.

4 Press OK.

If any timer settings remain, turn off the VCR to return to recording standby.

When the timer settings overlap

The program that starts first has priority and the second program starts recording only after the first program has finished. If the programs start at the same time, the program listed first in the menu has priority.



Recording stereo and bilingual programs (SLV-L76HF AR/L86HF AR only)

Recording stereo programs

This VCR automatically receives and records stereo programs. When a stereo program is received, the STEREO indicator lights up. If there is noise in the stereo program, set AUTO ESTEREO in the AJUSTES ESPECIALES to NO. The sound will be recorded in monaural (on both hi-fi and normal audio tracks) but with less noise. For details, see page 50.

Recording bilingual programs

Normally, this VCR records only the main sound. When a SAP (Second Audio Program) is received, the SAP indicator appears on the TV screen for a few seconds. To record only SAP sound, set SELEC. AUDIO in the AJUSTES ESPECIALES to SAP. For details, see page 50.

Selecting the sound during playback

Press AUDIO MONITOR to select the sound you want. (The sound being recorded will not change.)

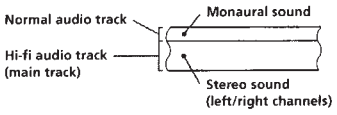
To listen to	On-screen display	Display window
Stereo	ESTEREO	STEREO
Left channel	CAN. I	STEREO
Right channel	CAN. D	STEREO
Monaural sound on the normal audio track*	No indicator	No indicator

* Usually the mixed sound of left and right channels (monaural)

continued

How sound is recorded on a video tape

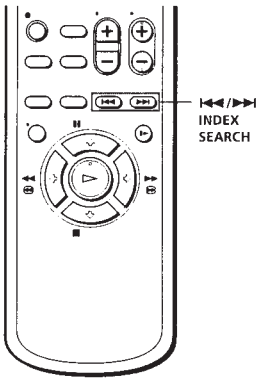
The VCR records sound onto two separate tracks. Hi-fi audio is recorded onto the main track along with the picture. Monaural sound is recorded onto the normal audio track along the edge of the tape.



Notes

- To listen to playback sounds in stereo, you must use the A/V connections.
- When you play a tape recorded in monaural, the sound is heard in monaural regardless of the AUDIO MONITOR setting.
- If the AUDIO MONITOR button does not function, check that MEZCL. AUDIO in the AJUSTES ESPECIALES is set to NO. For details, see page 50.

Searching using the index function



The VCR marks the tape with an index signal at the point where each recording begins. Use these signals as references to find a specific recording. The VCR can search up to 99 index signals ahead of or behind the current position.

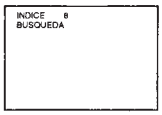
Before you start...

- Turn on the VCR and the TV.
- Set the TV to the video channel.

1 Insert an indexed tape into the VCR.

2 Press I◀◀ / ▶▶I INDEX SEARCH repeatedly to specify how many index signals ahead or behind you want to search:

- To search ahead, press ▶▶I INDEX SEARCH.
- To search backwards, press I◀◀ INDEX SEARCH.



The VCR starts searching and the index number on the TV screen counts down to zero. The playback starts from the point about five seconds ahead of the specified index mark.

To stop searching

Press ■ STOP.

Note

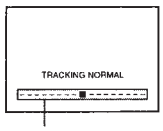
- No index signal will be added when recording starts from recording pause. However, an index signal will be marked if you change the channel during recording pause.

Adjusting the picture

Adjusting the tracking

Although the VCR automatically adjusts the tracking when playing a tape (the ▨ indicator flashes in the display window, then goes off), distortion may occur if the tape was recorded in poor condition. In this case, manually adjust the tracking.

During playback, press the TRACKING +/– on the VCR to display the tracking meter. The distortion should disappear as you press one of the two buttons (the ▨ indicator lights up). To resume automatic tracking adjustment, eject the tape and re-insert it.



Tracking meter

About the Adaptive Picture Control (APC) function

The Adaptive Picture Control (APC) function automatically improves recording and playback quality by adjusting the VCR to the condition of the video heads and tape. To maintain better picture quality, we recommend that you set APC to SI in the AJUSTES ESPECIALES (with the APC indicator in the display window lit). For details, see page 50.

APC playback

The APC function automatically works on all types of tapes, including rental tapes and tapes that were not recorded with APC.

APC recording

Whenever you insert a tape and start recording for the first time, the VCR adjusts to the tape using the APC function (the APC indicator flashes rapidly). This adjustment is retained until the tape is ejected.

To deactivate the APC function

Set APC to NO in the AJUSTES ESPECIALES. The APC indicator in the display window goes off.

Tip

- To set the tracking to the center position, press the TRACKING + and – buttons at the same time.

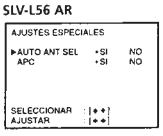
Note

- There is a delay of a few seconds before the VCR actually starts recording while the VCR analyzes the tape. To avoid the delay, first set the VCR to recording pause (the APC indicator flashes slowly) and press ● REC to have the VCR analyze the tape (the APC indicator flashes rapidly). After the APC indicator stops flashing, press ❚❚ PAUSE to start recording immediately. If you want to start recording quickly without using the APC function, first set the VCR to recording pause (the APC indicator flashes slowly) and press ❚❚ PAUSE to start recording.

Changing menu options

1 Press MENU, then select AJUSTES ESPECIALES.

SLV-L56 AR



SLV-L76HF AR/L86HF AR

2 Press ↑/↓ to select the option, then press ←/→ to change the setting.

3 Press OK to return to the original screen.

Menu choices

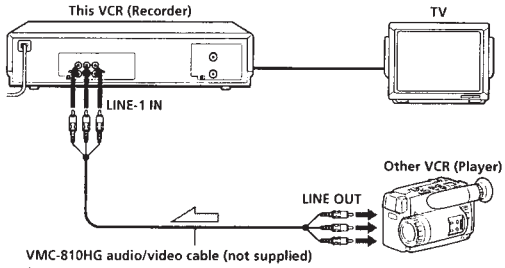
Initial settings are indicated in bold print.

Menu option	Set this option to
AUTO ANT SEL	• **SI** if your TV is connected only to VHF/UHF OUT on the VCR. To play a tape, set the TV to the VCR channel (channel 3 or 4). • NO if your TV is connected to both VHF/UHF OUT and LINE OUT on the VCR. To play a tape, set the TV to the video input.
AUTO ESTEREO (SLV-L76HF AR/ L86HF AR only)	• **SI** to receive stereo programs. • NO to reduce noise; the sound changes to monaural.
MEZCL. AUDIO (SLV-L76HF AR/ L86HF AR only)	• SI to listen to the hi-fi and normal audio tracks at the same time. The AUDIO MONITOR button will not function. • **NO** to listen to the hi-fi and normal audio tracks separately. Select the sound using the AUDIO MONITOR button. For details, see page 46.
SELEC. AUDIO (SLV-L76HF AR/ L86HF AR only)	• **MAIN** to record the main sound. • SAP to record the SAP (Second Audio Program) sound.
APC	• **SI** to switch on the APC (Adaptive Picture Control) function and improve picture quality. • NO to switch off APC.

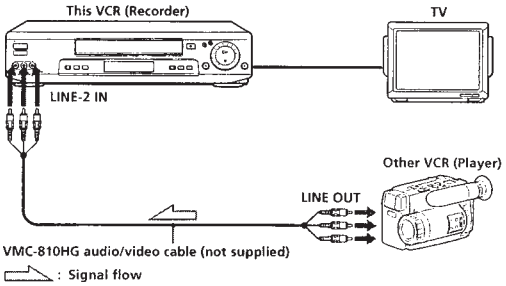
Editing

Hooking up to a VCR or stereo system

How to hook up to record on this VCR



For SLV-L86HF AR



continued

How to hook up to a stereo system (SLV-L76HF AR/ L86HF AR only)

Connect the LINE-1 IN AUDIO R/L or LINE-2 IN AUDIO L/R (SLV-L86HF AR only) jacks on this VCR to the audio output jacks on the stereo system, using the RK-C510KS audio cable (not supplied).

Tip

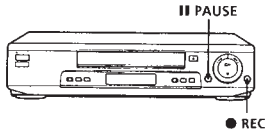
- For SLV-L56 AR, use a VMC-910HG audio/video cable (not supplied) to connect the other VCR to the LINE IN jacks.

Notes

- Make sure you connect the plugs to jacks of the same color.
- When you connect a monaural VCR to the LINE-1 IN jacks, the sound is recorded only on the channel whose jack is connected to the audio plug. To record on both right and left channels, connect the audio plugs to the AUDIO R/L jacks using a VMC-910HG audio/video cable (not supplied) (SLV-L76HF AR/L86HF AR only).
- When you connect a monaural VCR to the LINE-2 IN jacks, make sure to connect the audio plug to the AUDIO L (white) jack. The sound is recorded on both right and left channels. When connecting to the AUDIO R (red) jack, the sound is recorded only on the right channel (SLV-L86HF AR only).
- If you connected this VCR to both the LINE IN and LINE OUT jacks of the other VCR, select the input correctly to prevent humming noise.

Basic editing

(when recording on this VCR)



Before you start editing

- Turn on your TV and set it to the video channel.
- Press INPUT SELECT or CH +/– to display "L" (SLV-L56 AR only), "L1" (SLV-L76HF AR/L86HF AR only), or "L2" (SLV-L86HF AR only) in the display window.
- Press SP/LP (SP/EP) to select the tape speed (SP or LP for the PAL-N system, and SP or EP for the NTSC system).

1. Insert a source tape with its safety tab removed into the other (playback) VCR. Search for the point to start playback and set it to playback pause.
2. Insert a tape with its safety tab in place into this (recording) VCR. Search for the point to start recording and press II PAUSE.
3. Press ● REC on this VCR to set it to recording pause.
4. To start editing, press the II PAUSE buttons on both VCRs at the same time.

To stop editing

Press the ■ STOP buttons on both VCRs.

Tip

- To cut out unwanted scenes while editing, press II PAUSE on this VCR when an unwanted scene begins. When it ends, press II PAUSE again to resume recording.

Note

- If you start editing following the procedure above, the VCR won't start recording with the APC function. To record a tape with the APC function, press ● REC again during recording pause in step 3 so that the VCR analyzes the tape. Then, when you start recording in step 4, press II PAUSE after the APC indicator stops flashing. If you press II PAUSE before the APC indicator stops flashing, the APC function is canceled.

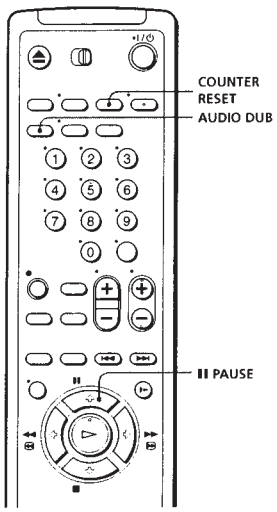
Audio dubbing

(SLV-L76HF AR/L86HF AR only)

This feature lets you record over the normal audio track. The monaural sound previously recorded is replaced while the original hi-fi sound remains unchanged. Use this feature to add commentary to a tape that you have recorded with a camcorder.

Before you start dubbing

- Turn on your TV and set it to the video channel.
- Press INPUT SELECT or CH +/– to display "L1" or "L2" (SLV-L86HF AR only) in the display window.



1. Insert a source tape into the stereo system (or the playback VCR). Search for the point to start playback and set it to playback pause.
2. Insert a prerecorded tape with its safety tab in place into this (recording) VCR. Search for the end of the section to be replaced and press II PAUSE.
3. Press COUNTER RESET to reset the counter to "0:00:00."
4. Rewind the prerecorded tape to the beginning of the section to be replaced.

   The VCR enters pause mode.
5. Press AUDIO DUB.

   The ⊖ indicator appears in the display window.
6. To start editing, press the II PAUSE buttons on this VCR and the stereo system (or other VCR) at the same time.

   When the counter reaches "0:00:00," audio dubbing stops automatically.

To stop while editing

Press the ■ STOP buttons on this VCR and the stereo system (or other VCR).

To listen to both the hi-fi and normal audio

Set MEZCL. AUDIO to SI in the AJUSTES ESPECIALES (page 50). Use this feature to listen to dubbed audio over the original hi-fi audio. When MEZCL. AUDIO is set to SI, the AUDIO MONITOR button does not function.

Remember to reset MEZCL. AUDIO to NO after playing the tape.

To listen to the dubbed sound (normal audio)

Press AUDIO MONITOR until the STEREO indicator goes off in the display window.

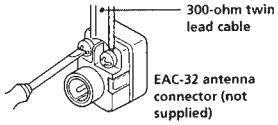
Note

- Recording stops if you press COUNTER RESET while audio dubbing.

General setup information

Attaching the external antenna connector

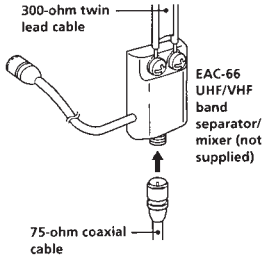
When using a 300-ohm twin lead cable for VHF/UHF antenna, use the EAC-32 antenna connector (not supplied) to connect the antenna to the VCR.



1 Loosen the screws on the antenna connector.
2 Wind the twin leads around the screws on the antenna connector.
3 Retighten the screws.

Attaching a UHF/VHF band mixer

When using both 75-ohm coaxial cable and 300-ohm twin lead cable for VHF/UHF antenna, use the EAC-66 UHF/VHF band separator/mixer (not supplied) to connect the antenna to the VCR.

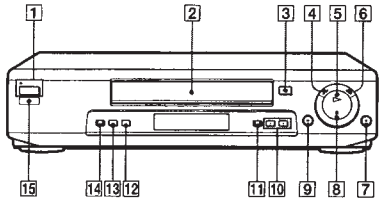


1 Loosen the screws on the mixer.
2 Wind the twin leads around the screws on the mixer.
3 Retighten the screws.
4 Connect the 75-ohm coaxial cable to the mixer.

Index to parts and controls

Refer to the pages indicated in parentheses ( ) for details.

Front panel (SLV-L56 AR/L76HF AR)

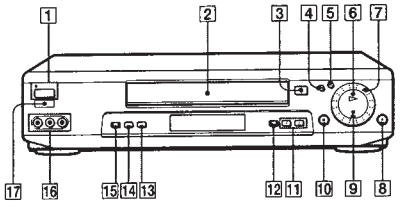


1 I/⏻/POWER switch/indicator (13, 34)
2 Tape compartment
3 ⏏ EJECT button (26)
4 ◀◀ REW (rewind) button (36)
5 ▷ PLAY button (36)
6 ▶▶ FF (fast-forward) button (36)
7 ● REC (record) button (53)
8 ■ STOP button (53)
9 ❚❚ PAUSE button (53)
10 CHANNEL/TRACKING +/– buttons (37, 38, 48)
11 EASY TIMER button (38)
12 COLOR SYSTEM button (26)
13 SP (Standard Play)/LP (Long Play) (SP/EP (Extra Play)) button (30)
14 ONE TOUCH TUNING button (16)
15 Remote sensor (5)

continued

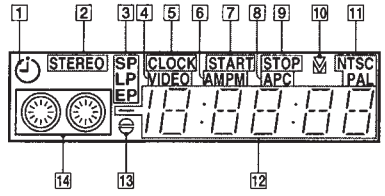
Index to parts and controls (continued)

Front panel (SLV-L86HF AR)



1 I/⏻/POWER switch/indicator (13, 34)
2 Tape compartment
3 ⏏ EJECT button (26)
4 ◀◀ REW (rewind) button (36)
5 ▶▶ FF (fast-forward) button (36)
6 ▷ PLAY button (36)
7 Click shuttle ring (37)
8 ● REC (record) button (53)
9 ■ STOP button (53)
10 ❚❚ PAUSE button (53)
11 CHANNEL/TRACKING +/– buttons (37, 38, 48)
12 EASY TIMER button (38)
13 COLOR SYSTEM button (26)
14 SP (Standard Play)/LP (Long Play) (SP/EP (Extra Play)) button (30)
15 ONE TOUCH TUNING button (16)
16 LINE-2 IN VIDEO/AUDIO L/R jacks (51)
17 Remote sensor (5)

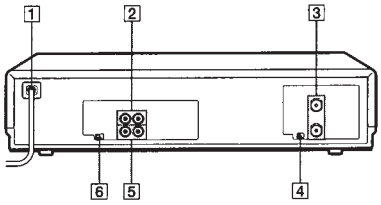
Display window



1 Timer indicator (34)
2 STEREO indicator (45)
3 Tape speed indicator (30)
4 VIDEO indicator (13, 31)
5 CLOCK indicator (38)
6 AM/PM indicator (38)
7 START indicator (39)
8 APC (Adaptive Picture Control) indicator (48)
9 STOP indicator (39)
10 Tracking indicator (48)
11 Color system indicator (26)
12 Time counter/clock/line/channel indicator (27, 30, 38, 53)
13 Audio dubbing indicator (54)
14 Tape/recording indicator (30)

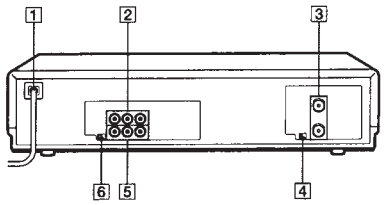
continued

Rear panel (SLV-L56 AR)



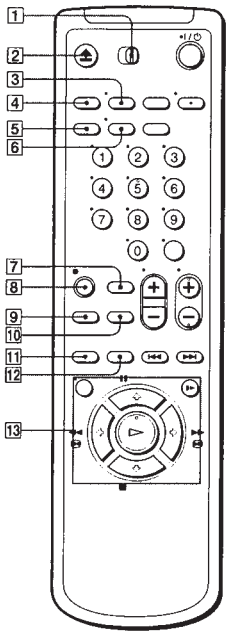
1 AC power cord
2 LINE IN AUDIO/VIDEO jacks (51)
3 VHF/UHF IN/OUT connectors (9, 10, 11, 12)
4 RF (Radio Frequency) UNIT switch (13)
5 LINE OUT AUDIO/VIDEO jacks (8)
6 NTSC PB (playback) switch (26)

Rear panel (SLV-L76HF AR/L86HF AR)



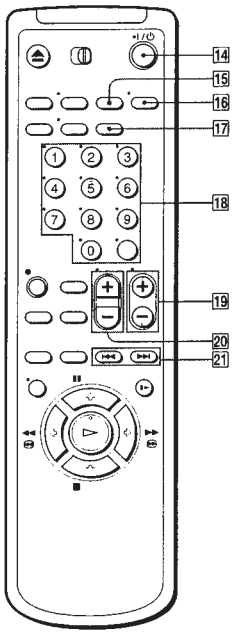
1 AC power cord
2 LINE-1 IN AUDIO R/L/VIDEO jacks (51)
3 VHF/UHF IN/OUT connectors (9, 10, 11, 12)
4 RF (Radio Frequency) UNIT switch (13)
5 LINE OUT AUDIO R/L/VIDEO jacks (7)
6 NTSC PB (playback) switch (26)

Remote commander



1 TV/VIDEO remote control switch (5)
2 ⏏ EJECT button (26)
3 DISPLAY button (30)
4 TRINITRON TV SYNCHRO PLAY button (28)
5 AUDIO DUB (dubbing) button (SLV-L76HF AR/L86HF AR only) (54)
6 TV/VIDEO button (13, 31)
7 EASY TIMER button (38)
8 ● REC (record) button (30, 53)
9 SP (Standard Play)/LP (Long Play) (SP/EP (Extra Play)) button (30)
10 QUICK TIMER button (42)
11 INPUT SELECT button (31, 34)
12 ×2 button (36)
13 Tape/menu operation buttons
MENU button (33, 43)
❚❚ PAUSE/↑ button (15, 26, 53)
■ STOP/↓ button (15, 26, 53)
◀◀ REW (rewind)/← button (26, 36)
▶▶ FF (fast-forward)/→ button (26, 36)
▷ PLAY/OK button (15, 26)
▮▶ SLOW button (36)

continued

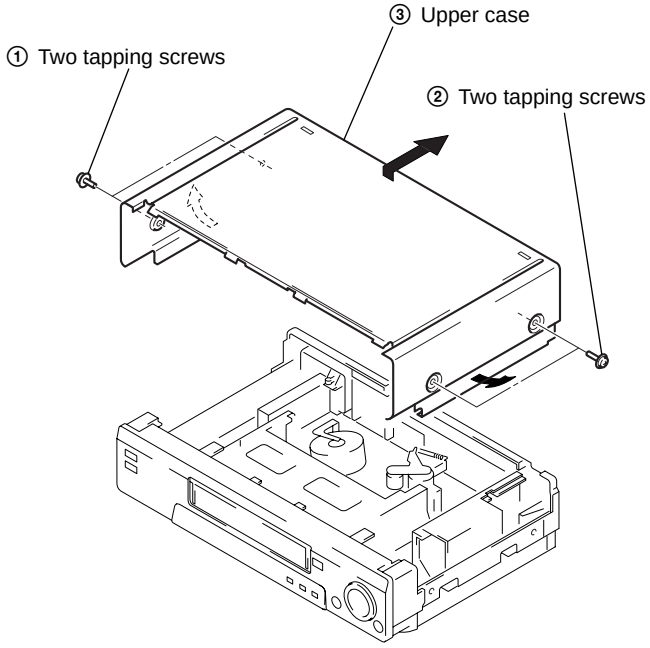


14 I/⏻ (power) switch (13, 34)
15 COUNTER RESET button (27, 54)
16 AUDIO MONITOR button (SLV-L76HF AR/L86HF AR only) (45)
17 CLEAR button (43)
18 Number buttons and ENTER (AM/PM) button (32, 40)
19 CH (channel) +/– buttons (20, 30)
20 VOL (volume) +/– buttons *(for TV)*
21 ⏮/⏭ INDEX SEARCH buttons (47)

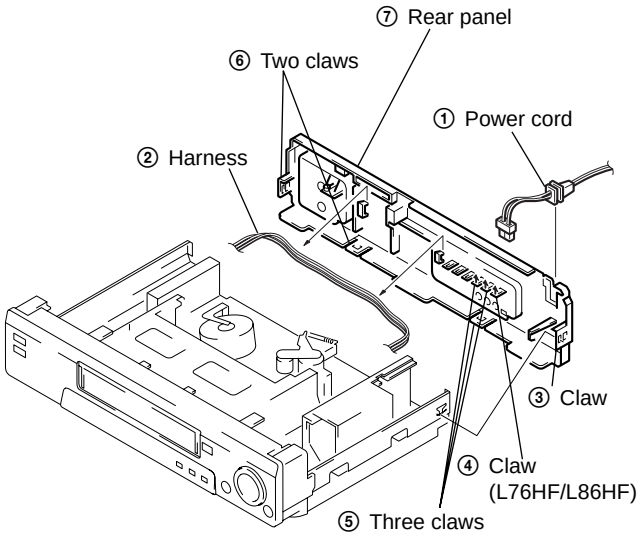
SECTION 2
DISASSEMBLY

Note: Follow the disassembly procedure in the numerical order given.

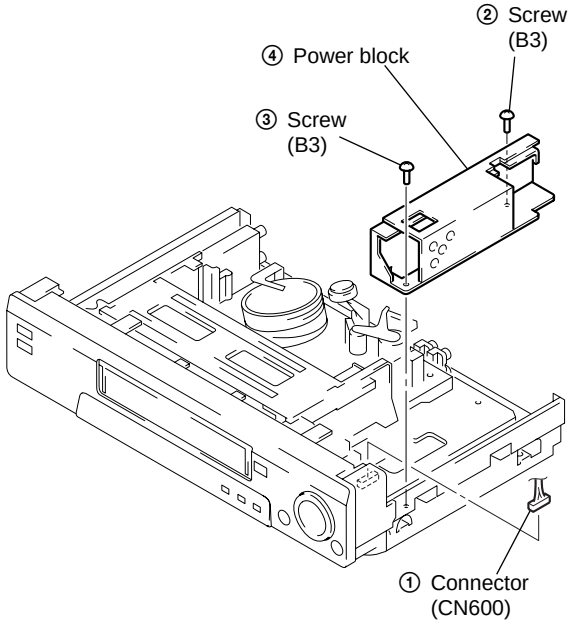
2-1. UPPER CASE REMOVAL



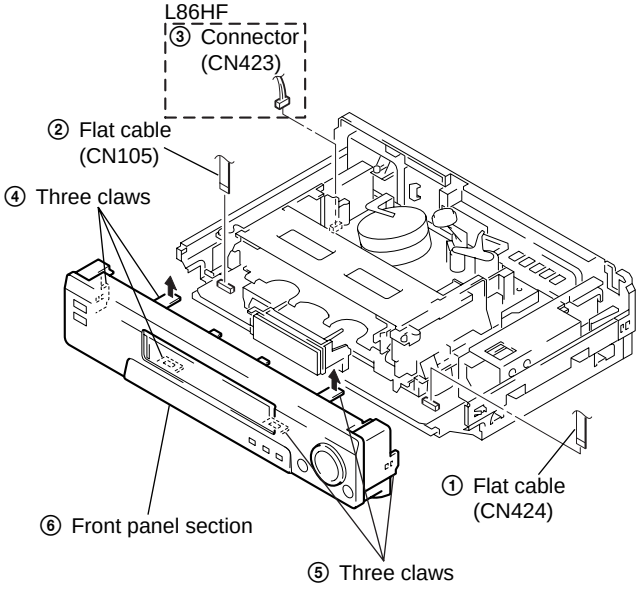
2-2. REAR PANEL REMOVAL



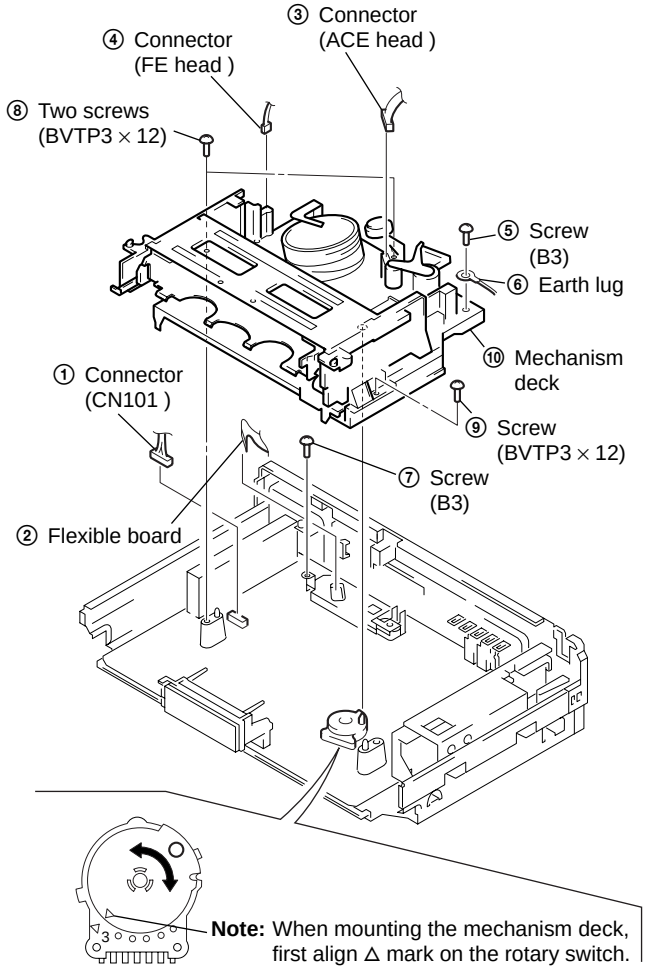
2-3. POWER BLOCK REMOVAL



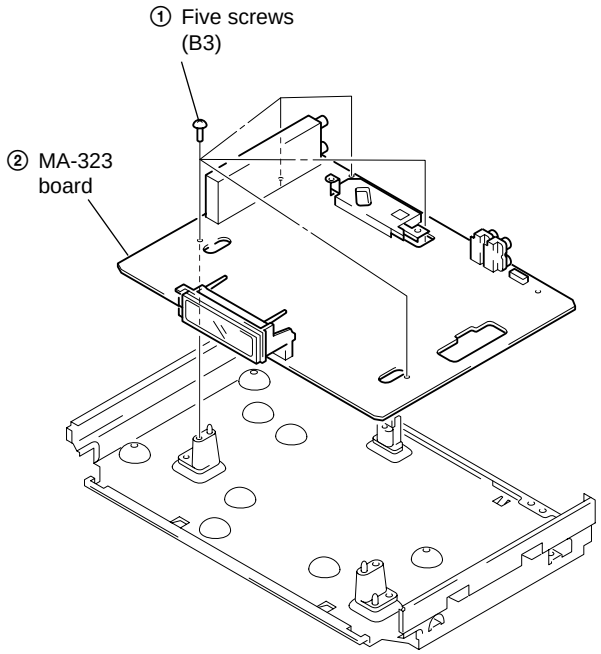
2-4. FRONT PANEL SECTION REMOVAL



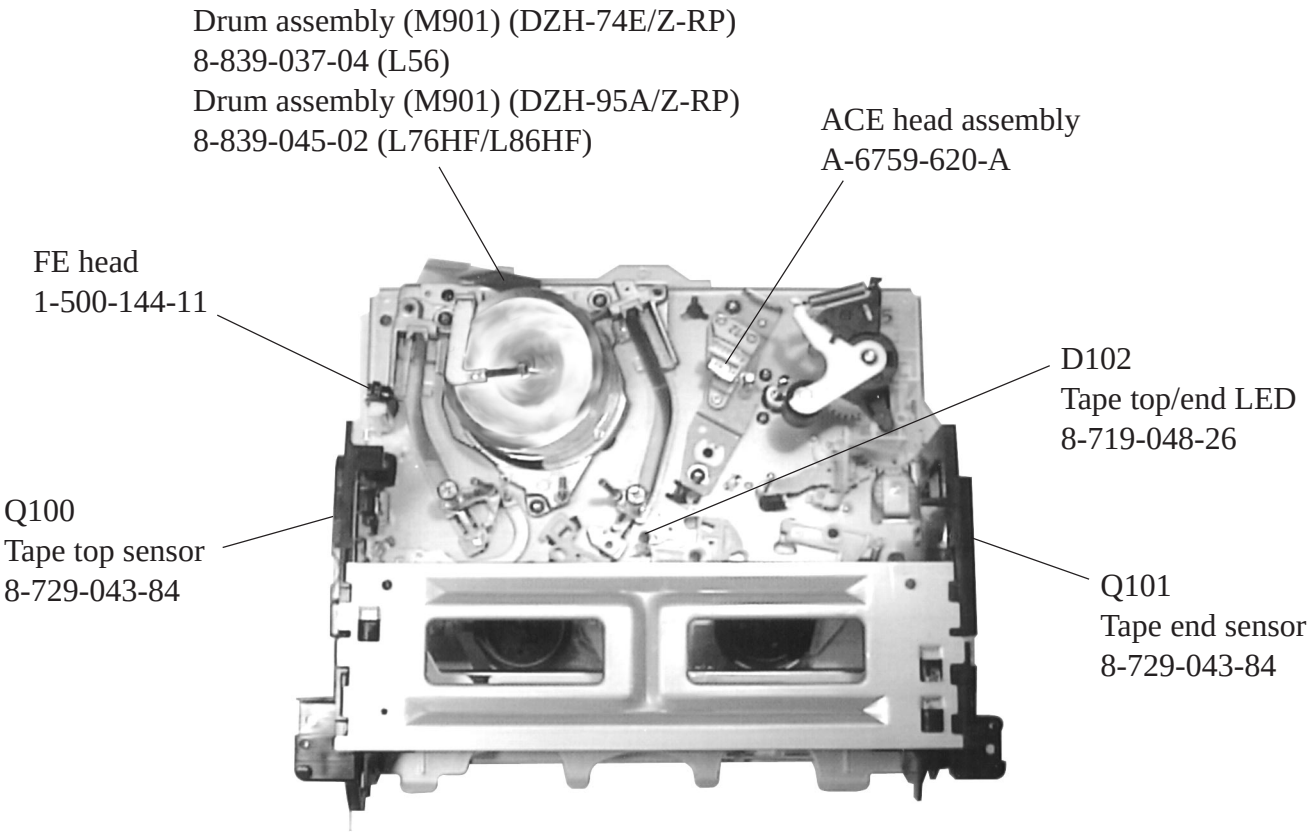
2-5. MECHANISM DECK REMOVAL

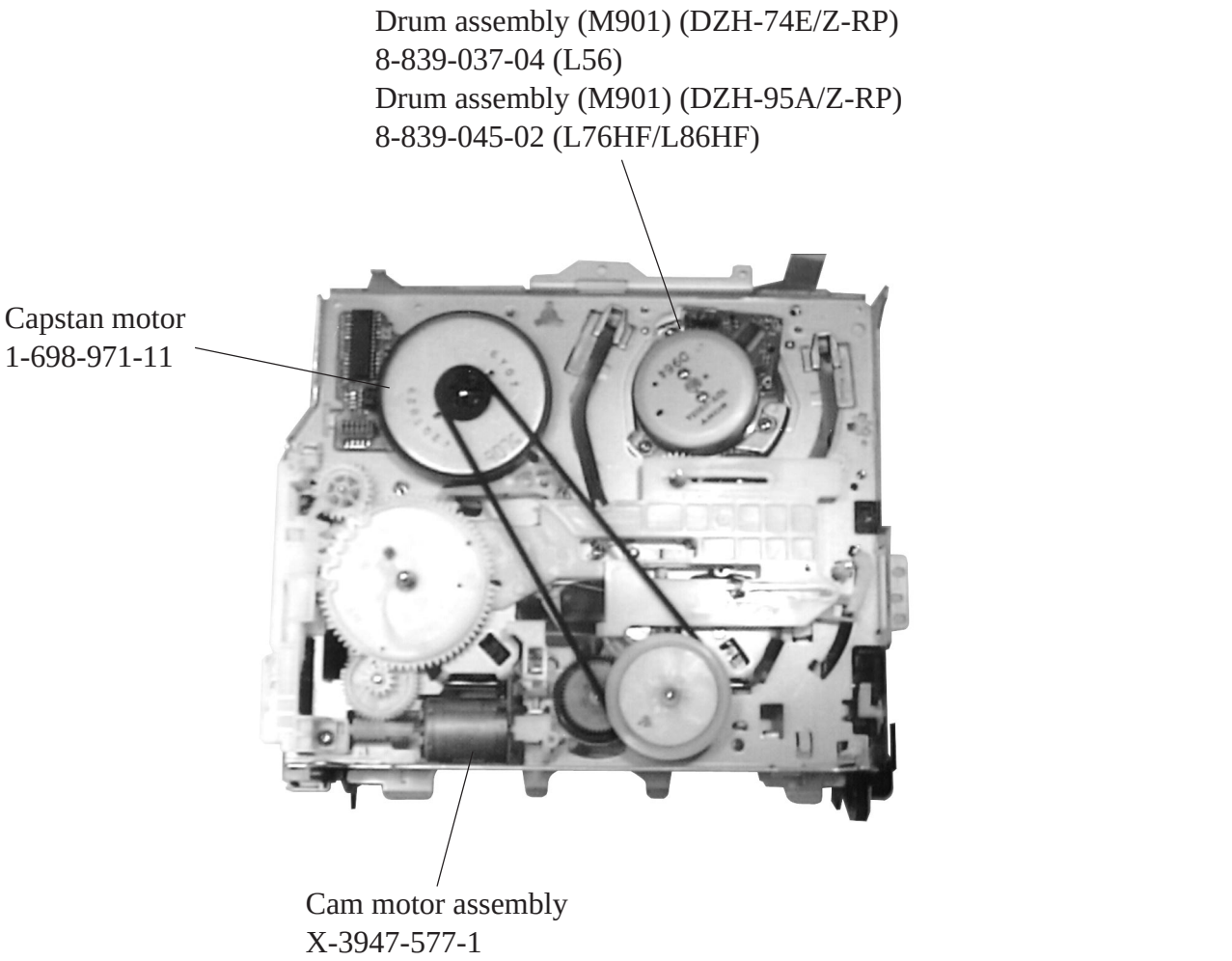


2-6. MA-323 BOARD REMOVAL

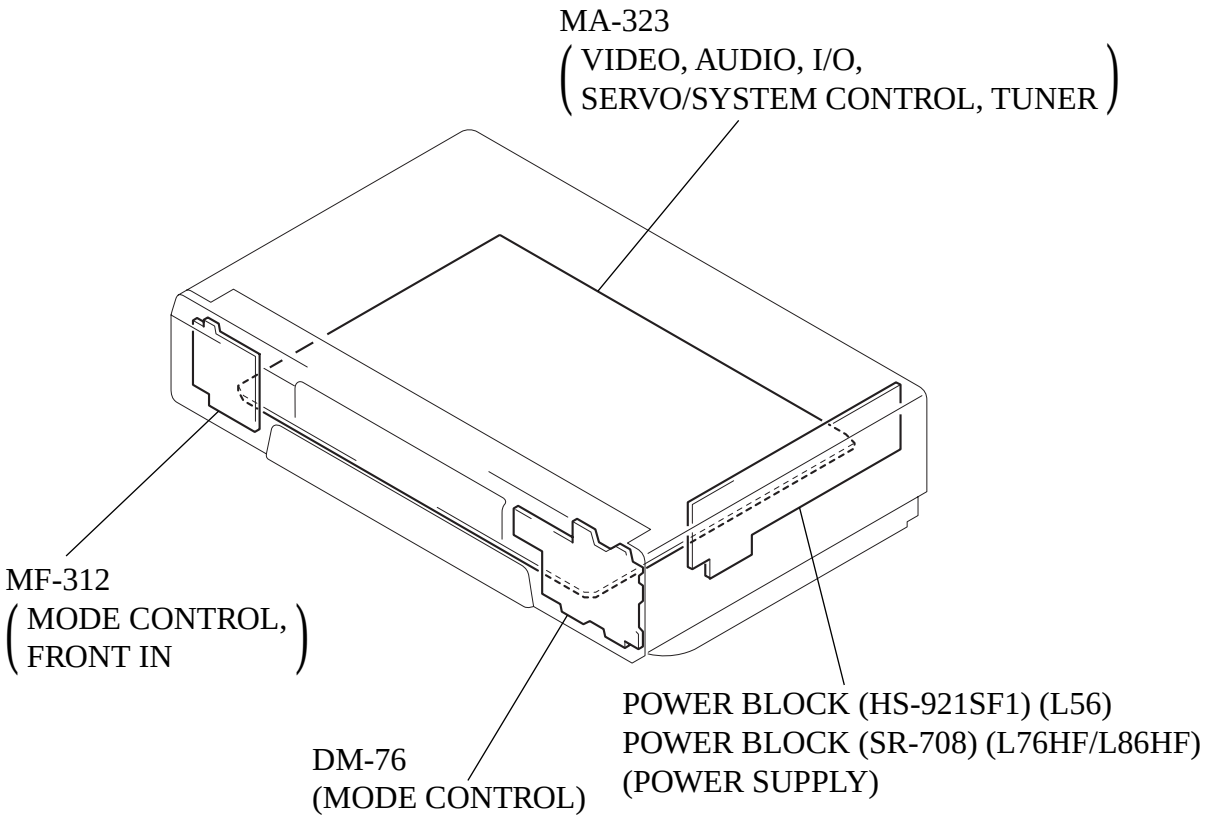


2-7. INTERNAL VIEWS



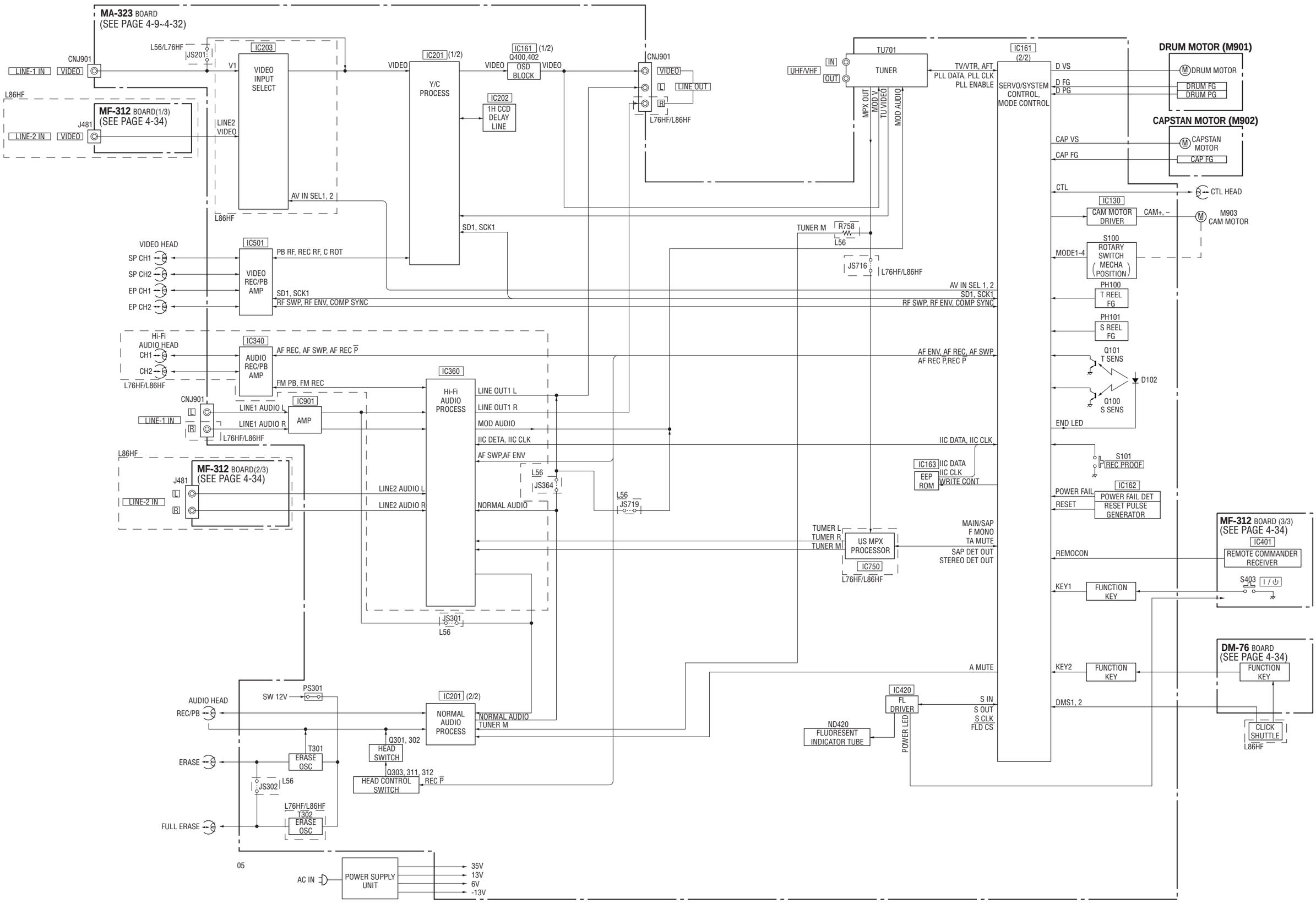


2-8. CIRCUIT BOARDS LOCATION

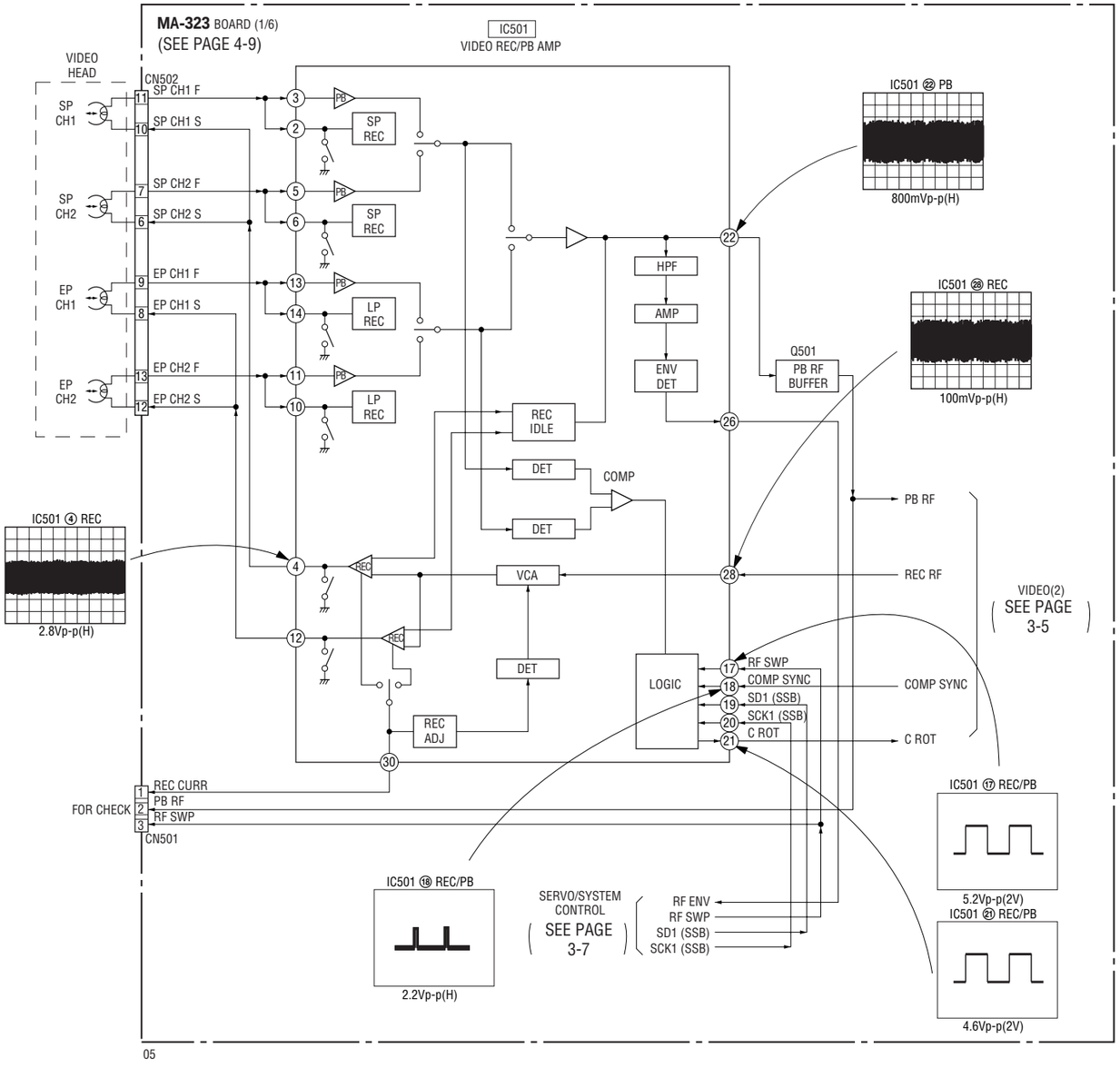


SECTION 3
BLOCK DIAGRAMS

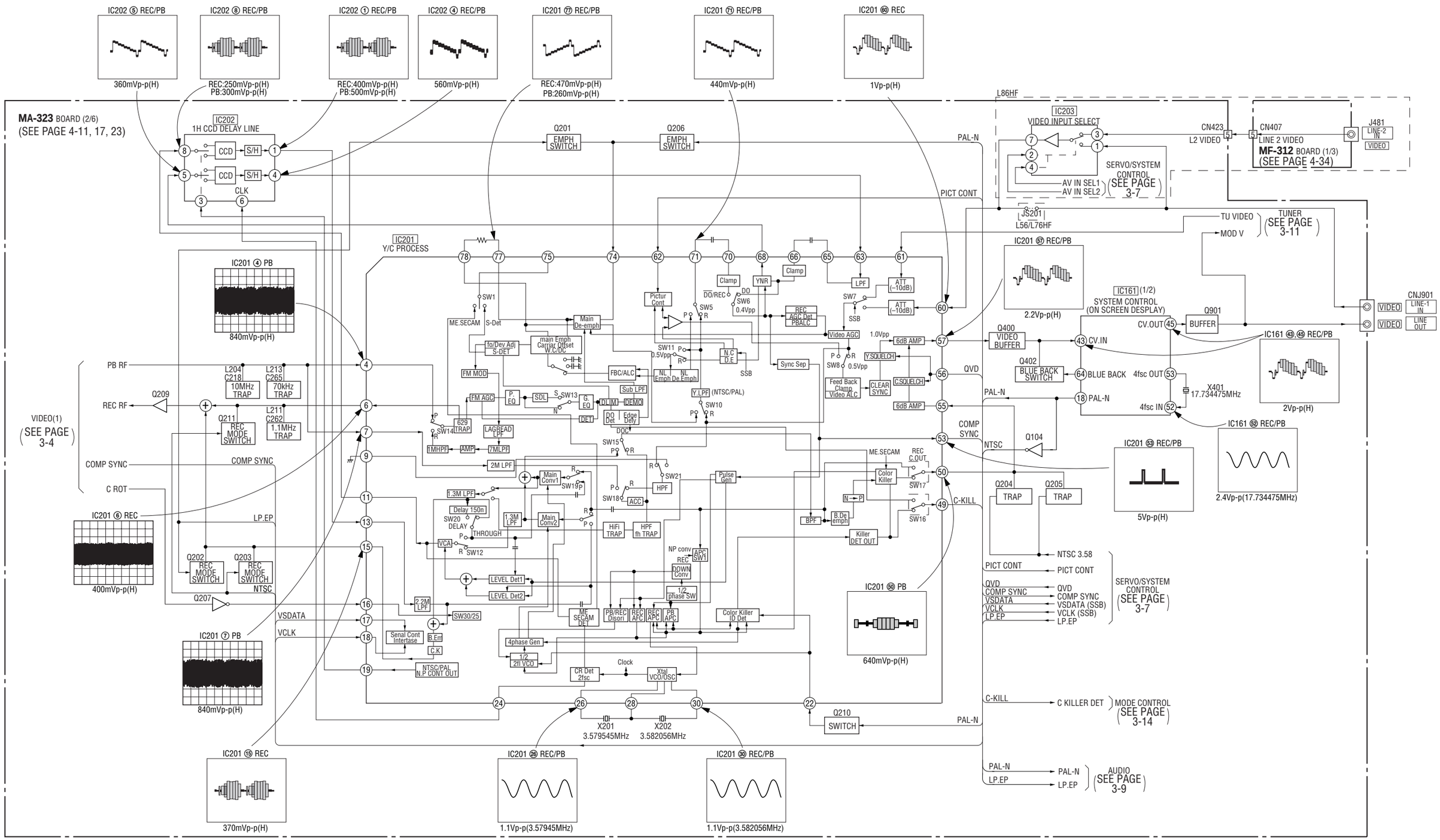
3-1. OVERALL BLOCK DIAGRAM



3-2. VIDEO (1) BLOCK DIAGRAM

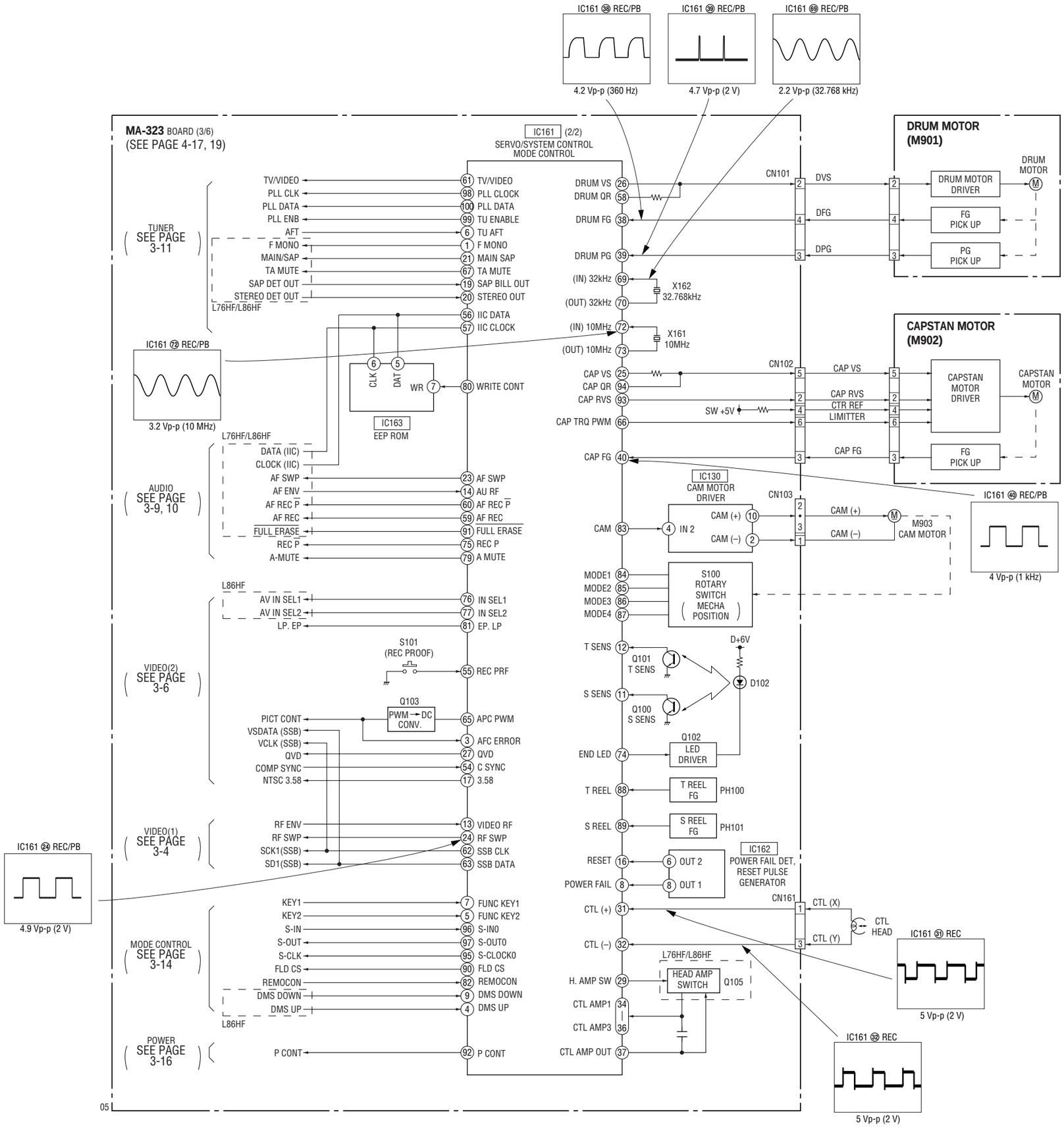


3-3. VIDEO (2) BLOCK DIAGRAM

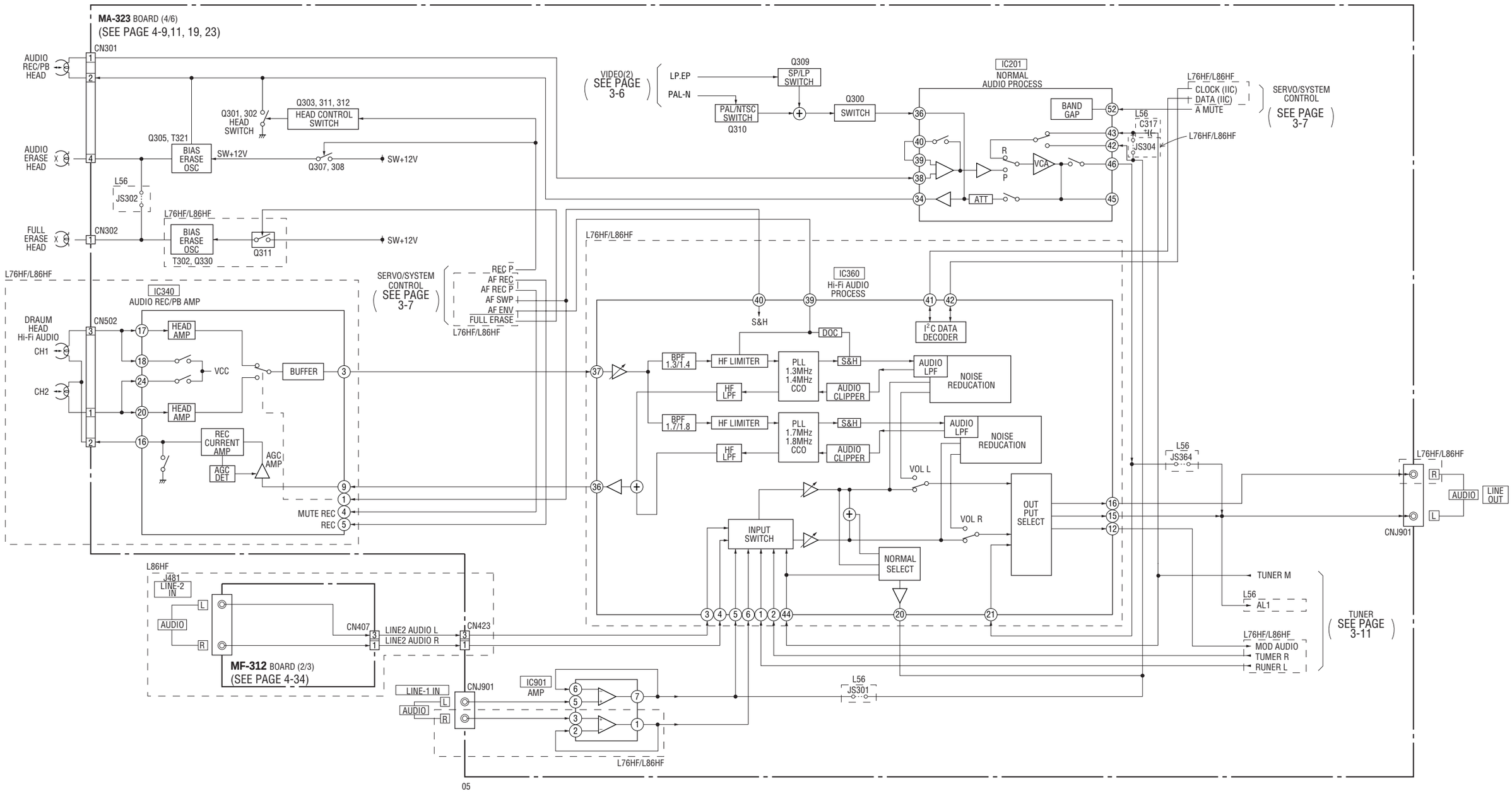


05

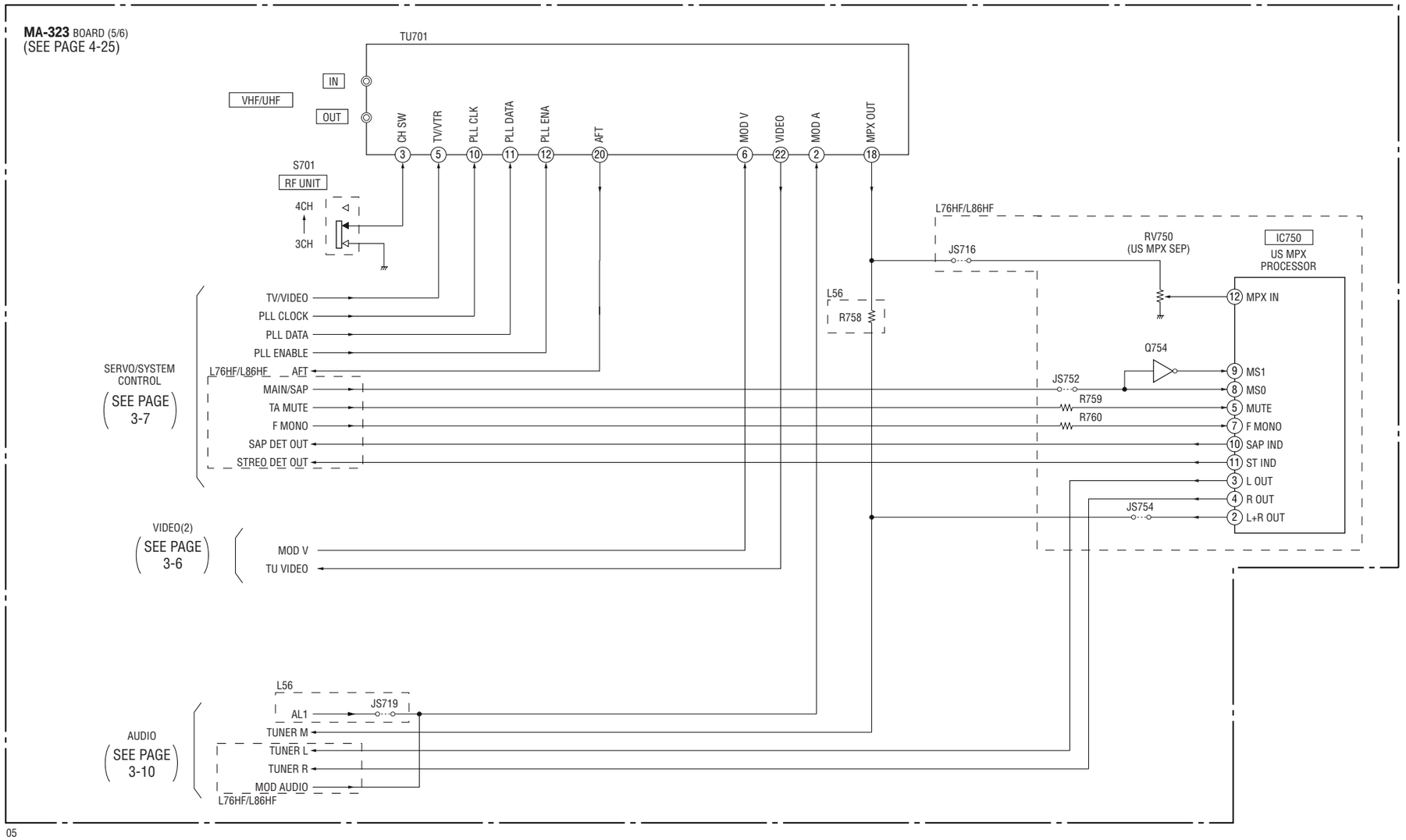
3-4. SERVO/SYSTEM CONTROL BLOCK DIAGRAM



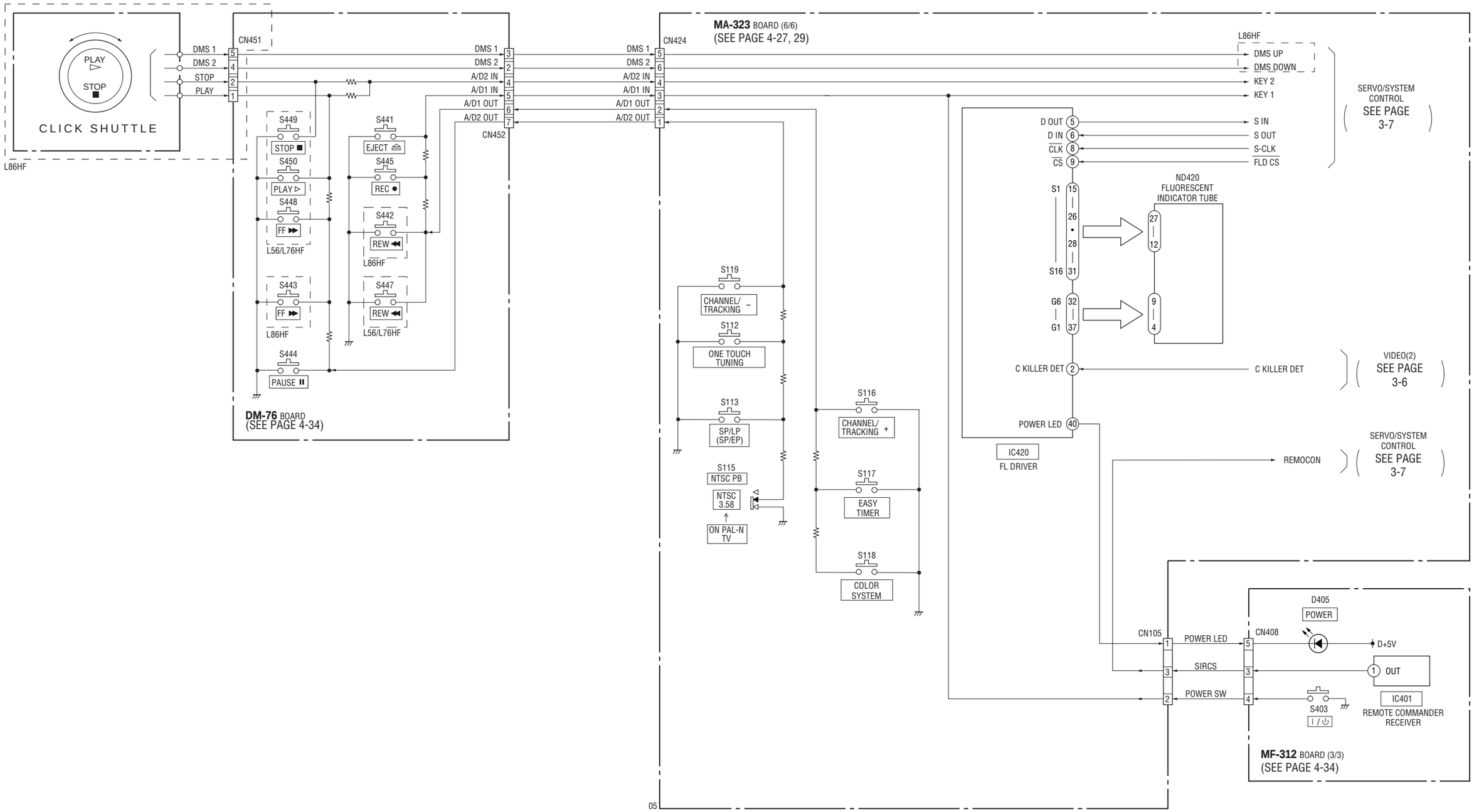
3-5. AUDIO BLOCK DIAGRAM



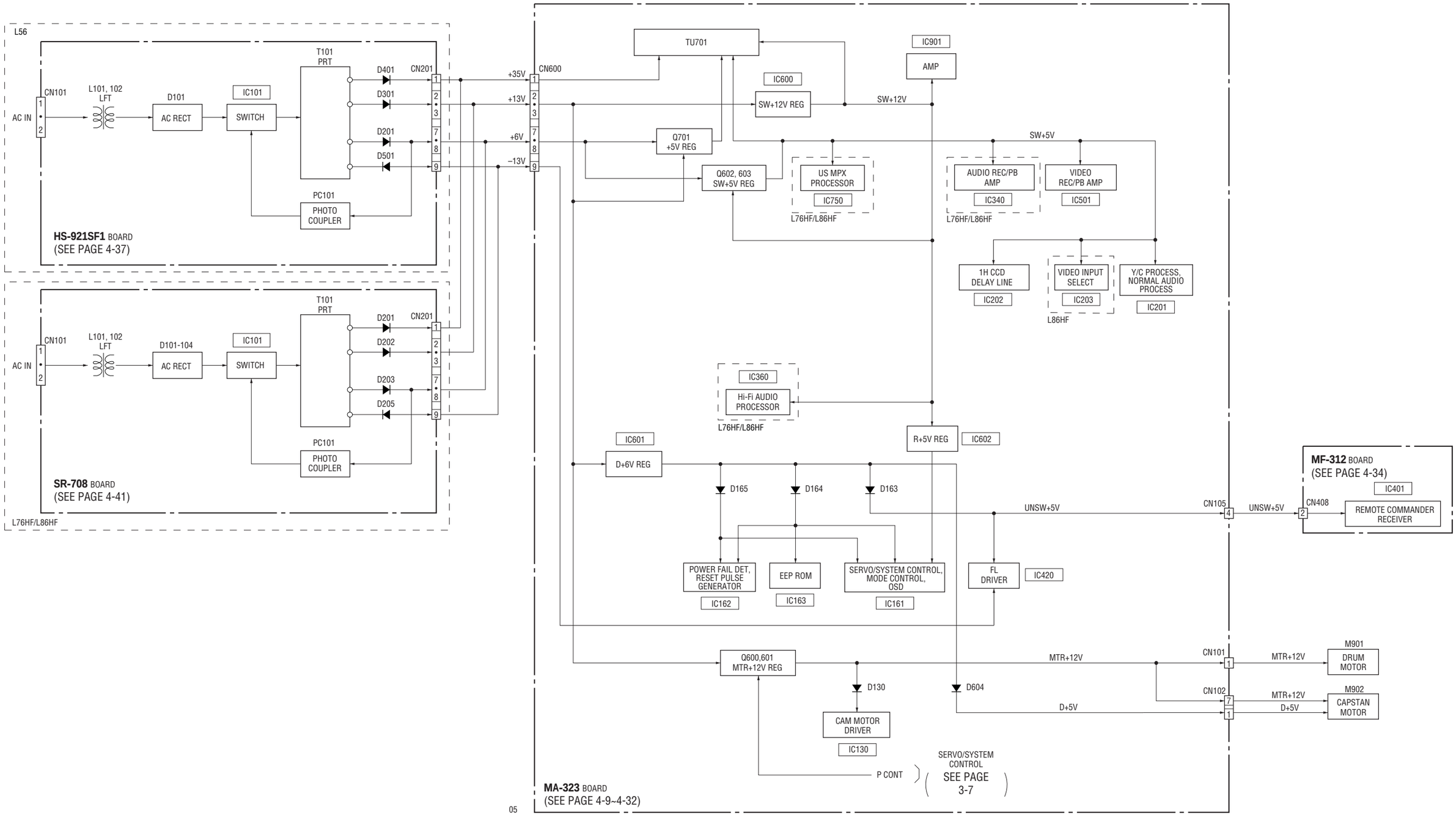
3-6. TUNER BLOCK DIAGRAM



3-7. MODE CONTROL BLOCK DIAGRAM



3-8. POWER BLOCK DIAGRAM



SECTION 4
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this, the necessary note is printed in each block.)

For printed wiring boards:

- ○——— : indicates a lead wire mounted on the component side.
- ●——— : indicates a lead wire mounted on the printed side.
- ▒▒▒▒ : Pattern from the side which enables seeing.

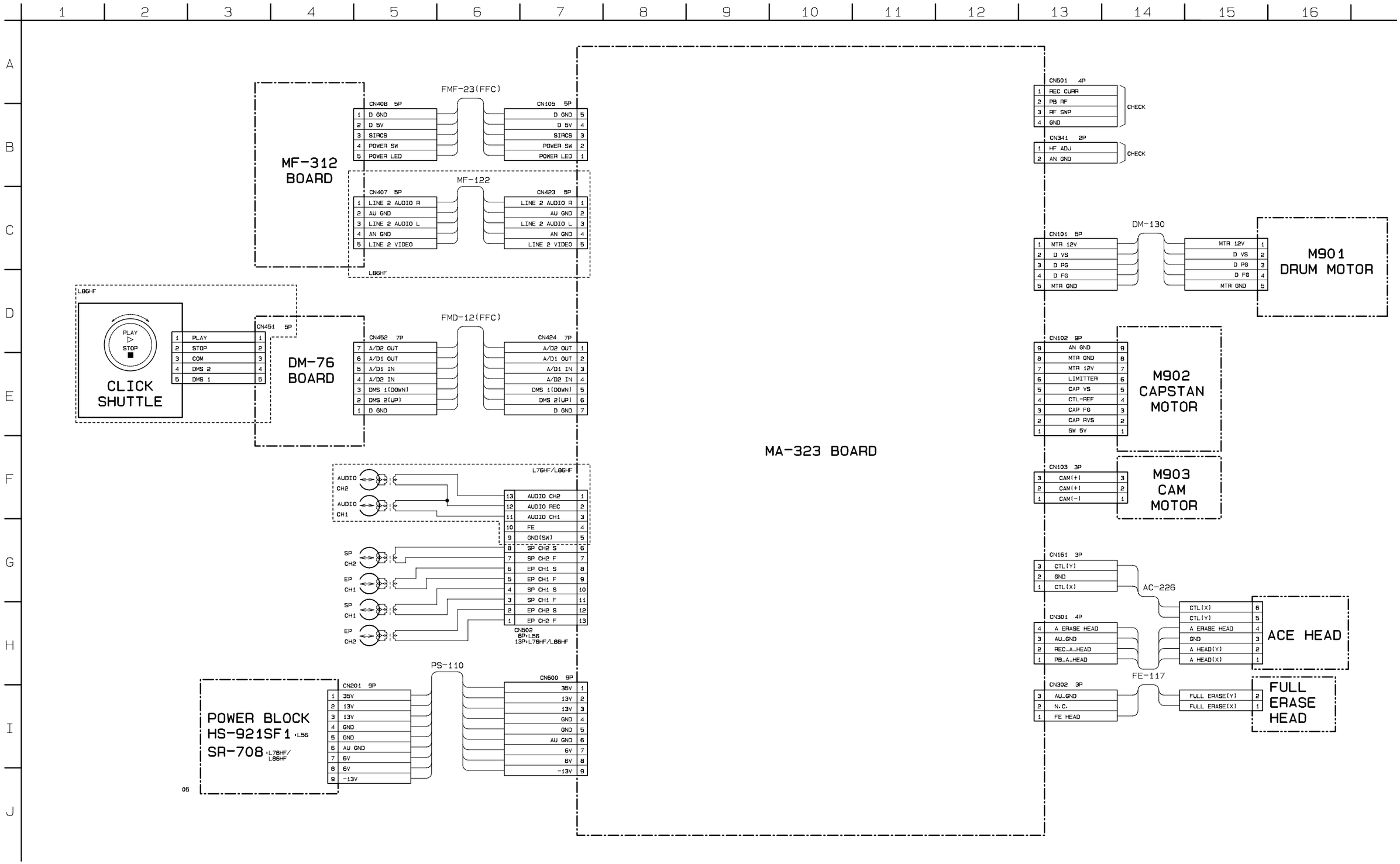
For schematic Diagram:

- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/4 W (Chip resistors : 1/10 W) unless otherwise specified.
  kΩ : 1000Ω, MW : 1000kΩ.
- All capacitors are in µF unless otherwise noted. pF : µµF 50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- : nonflammable resistor.
- : fusible resistor.
- : panel designation.
- △ : internal component.
- : adjustment for repair.
- B + : B+ Line.
- B − : B– Line.
- Circled numbers refer to waveforms.
- Voltages are dc between measurement point.
- Readings are taken with a color-bar signal input.
- Readings are taken with a digital multimeter (DC 10MW).
- Voltage variations may be noted due to normal production tolerances.

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

4-1. FRAME SCHEMATIC DIAGRAM

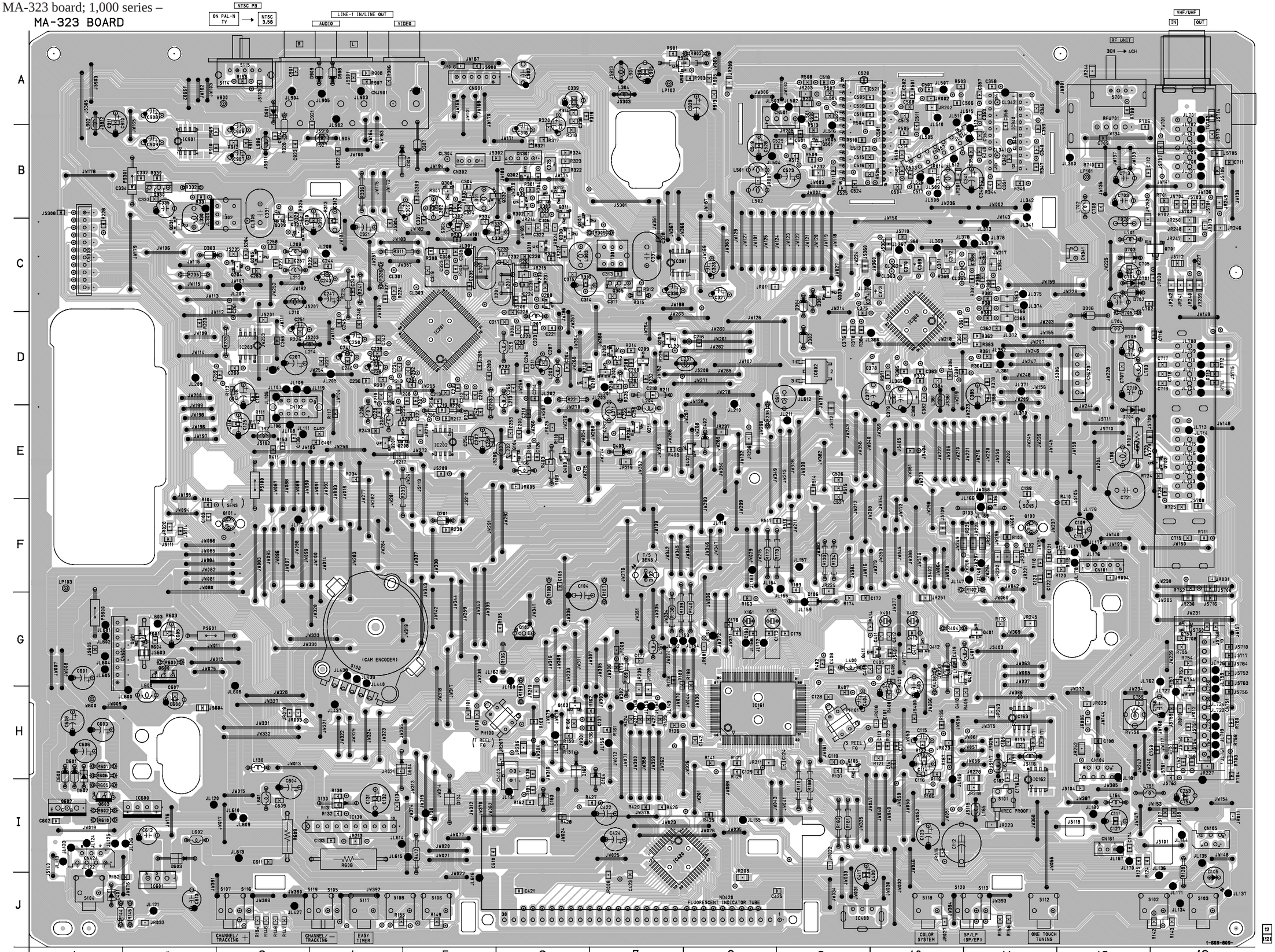


4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

There are few cases that the part isn't mounted in this model is printed on this diagram.

MA-323 (HEAD AMP, VIDEO, AUDIO, IO, SERVO/SYSTEM CONTROL, TUNER) PRINTED WIRING BOARD

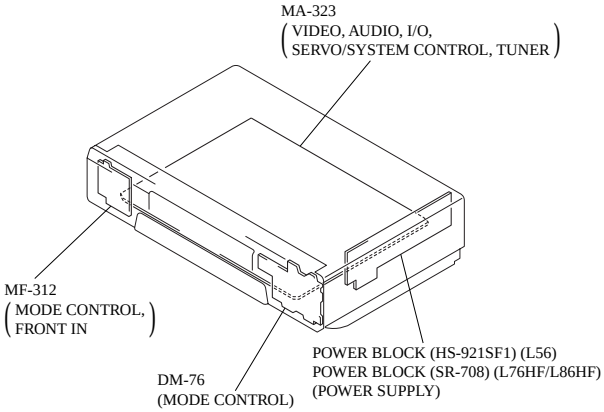
– Ref. No.: MA-323 board; 1,000 series –



HEAD AMP, VIDEO, AUDIO, IO, SERVO/SYSTEM CONTROL, TUNER
MA-323

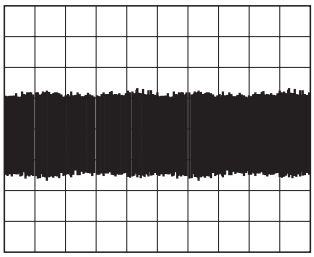
MA-323 BOARD

CN101	F-12	Q100	F-11
CN102	E-3	Q101	F-3
CN103	H-6	Q102	G-6
CN105	I-13	Q103	H-6
CN161	I-12	Q104	E-6
CN301	B-6	Q105	H-9
CN302	B-5	Q201	E-4
CN341	C-12	Q202	D-7
CN423	D-12	Q203	D-7
CN424	I-1	Q204	C-3
CN501	A-9	Q205	C-3
CN502	B-10	Q206	E-4
CN600	G-1	Q207	D-7
		Q208	C-6
D102	F-7	Q209	D-7
D103	F-11	Q210	D-6
D104	I-5	Q211	E-7
D106	G-9	Q300	B-5
D130	I-4	Q301	B-6
D163	I-6	Q302	B-6
D164	I-7	Q303	B-6
D165	H-6	Q305	C-7
D201	F-5	Q307	C-6
D305	B-5	Q308	C-6
D306	D-12	Q309	B-3
D307	B-5	Q310	C-6
D401	J-1	Q311	B-6
D402	E-8	Q312	B-6
D403	E-7	Q330	B-2
D600	H-1	Q331	C-2
D601	H-1	Q332	B-6
D602	H-1	Q400	E-6
D603	I-2	Q402	E-8
D604	H-5	Q501	B-9
D701	C-12	Q600	G-2
D702	C-12	Q601	G-2
D704	E-12	Q602	I-1
D908	A-4	Q603	I-1
D909	A-4	Q701	C-13
		Q754	H-13
IC130	I-4	Q901	A-7
IC161	H-8		
IC162	I-11		
IC163	H-11		
IC201	D-5		
IC202	E-5		
IC203	D-3		
IC340	B-11		
IC360	D-10		
IC420	I-7		
IC501	B-9		
IC600	I-2		
IC601	J-2		
IC602	D-9		
IC750	H-13		
IC901	B-2		



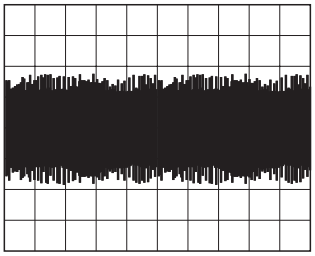
• **Waveforms**

❶ IC501 ④ REC



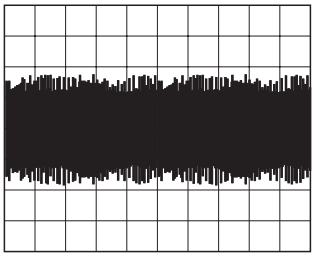
2.8 Vp-p (H)

❷ IC501 ㉘ REC



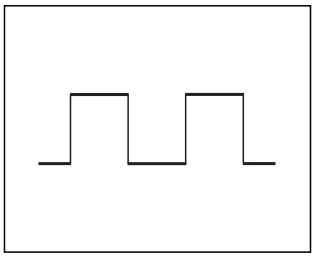
100 mVp-p (H)

❸ IC501 ㉒ PB



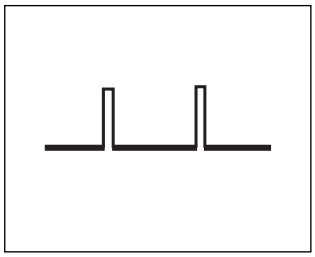
800 mVp-p (H)

❹ IC501 ㉑ REC/PB



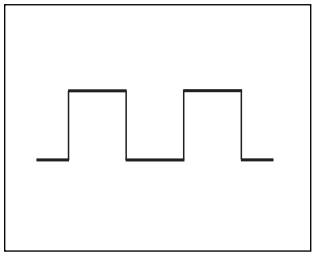
4.6 Vp-p (2 V)

❺ IC501 ⑱ REC/PB



2.2 Vp-p (H)

❻ IC501 ⑰ REC/PB



5.2 Vp-p (2 V)

MA-323 (HEAD AMP) SCHEMATIC DIAGRAM **• See page 4-5 for printed wiring board.**

– Ref. No.: MA-323 board; 1,000 series –

MA-323 BOARD(1/10)

IC501
HA118195NT
IC501
VIDEO REC/PB AMP

CN502
8p:L56
13p:L76HF/L86HF

CN502 13P

1	EP CH2 F	13	JL505
2	EP CH2 S	12	JL506
3	SP CH1 F	11	JL507
4	SP CH1 S	10	JL508
5	EP CH1 F	9	JL509
6	EP CH1 S	8	JL510
7	SP CH2 F	7	
8	SP CH2 S	6	
9	GND(SW)	5	JL511
10	FE	4	JL512
11	AUDIO CH1	3	JL513
12	AUDIO REC	2	JL514
13	AUDIO CH2	1	JL515

L76HF/L86HF

CN501 4P

REC CURR	1	JL501
PB RF	2	JL502
RF SWP	3	JL503
GND	4	JL504

CHECK

C501 0.01u B

C529 0.01u B

NO MARK:REC/PB MODE
R:REC MODE
P:PB MODE

• SIGNAL PATH

	VIDEO SIGNAL	AUDIO SIGNAL
	Y/CHROMA	
REC	➡	➡
PB	⇨	⇨

EP CH2
SP CH1
EP CH1
SP CH2
AUDIO CH1
AUDIO CH2

C506 0.022u B
R503 0
C505 22p CH
C507 0.022u B
C509 22p CH
C513 0.022u B
C510 0.022u B
R504 0
C511 0.022u B
C512 22p CH
C514 0.022u B
C515 22p CH
C517 0.022u B
C516 0.022u B
R506 0

R501 330
C508 0.022u B
R502 330
C504 0.022u B

R505 0

1 2.1 Q_ADJ SP CH1
2 R4.3/P0 REC BIAS SP CH1
3 R0.1/P0.7 SP CH1 PB
4 R4.3/P0 SP REC
5 R0.1/P0.7 SP CH2 PB
6 R4.3/P0 REC BIAS SPCH2
7 R5.1/P2.2 Q_ADJ SP CH2 SP LAMP
8 GND
9 2.1 Q_ADJ EP CH2 EP LAMP
10 0 REC BIAS EP CH2
11 0.7 EP CH2 PB
12 0 EP REC
13 0.7 EP CH1 PB
14 0 REC BIAS EP CH1
15 2.1 Q_ADJ EP CH1
16 5.2 VCC
17 2.3 RF SWP
18 0.3 COMP SYNC
19 3 SD1(SSB)
20 3 SCK1(SSB)
21 R2.3/P1.9 C.ROT
22 R1.4/P3.2 PB RF
23 GND
24 PB FM AGC IN
25 AGC DET
26 ENV DET OUT
27 R0.3/P2 PB FM AGC OUT
28 R2.2/P2 REC RF
29 5.2 VCC
30 R4.3/P5.2 REC CURR

R507 1500
L501 100uH
C519 100u 10V
C520 4.7u F
C518 0.01u B
R508 1k
CL504
C521 0.1u B
C522 0.1u F
JL516
R509 2200
R510 10k
R513 1k
Q501 2SC2712Y-TE85L
R1.4/P3.2
R0.7/P2.5
5.2
Q501 PB RF BUFFER
R511 22k
R512 22k
C523 100u 10V
L502 100uH
C524 4.7u F
B+

VRCRF
VPBRF
CROT
VCS2
ANGND
SW5V
ANGND
DGND
VR6
VSWP
VCLK1
VDT1

R516 10k
C526 10p CH
R514 15k
C527 10p CH
R515 15k
R517 10k

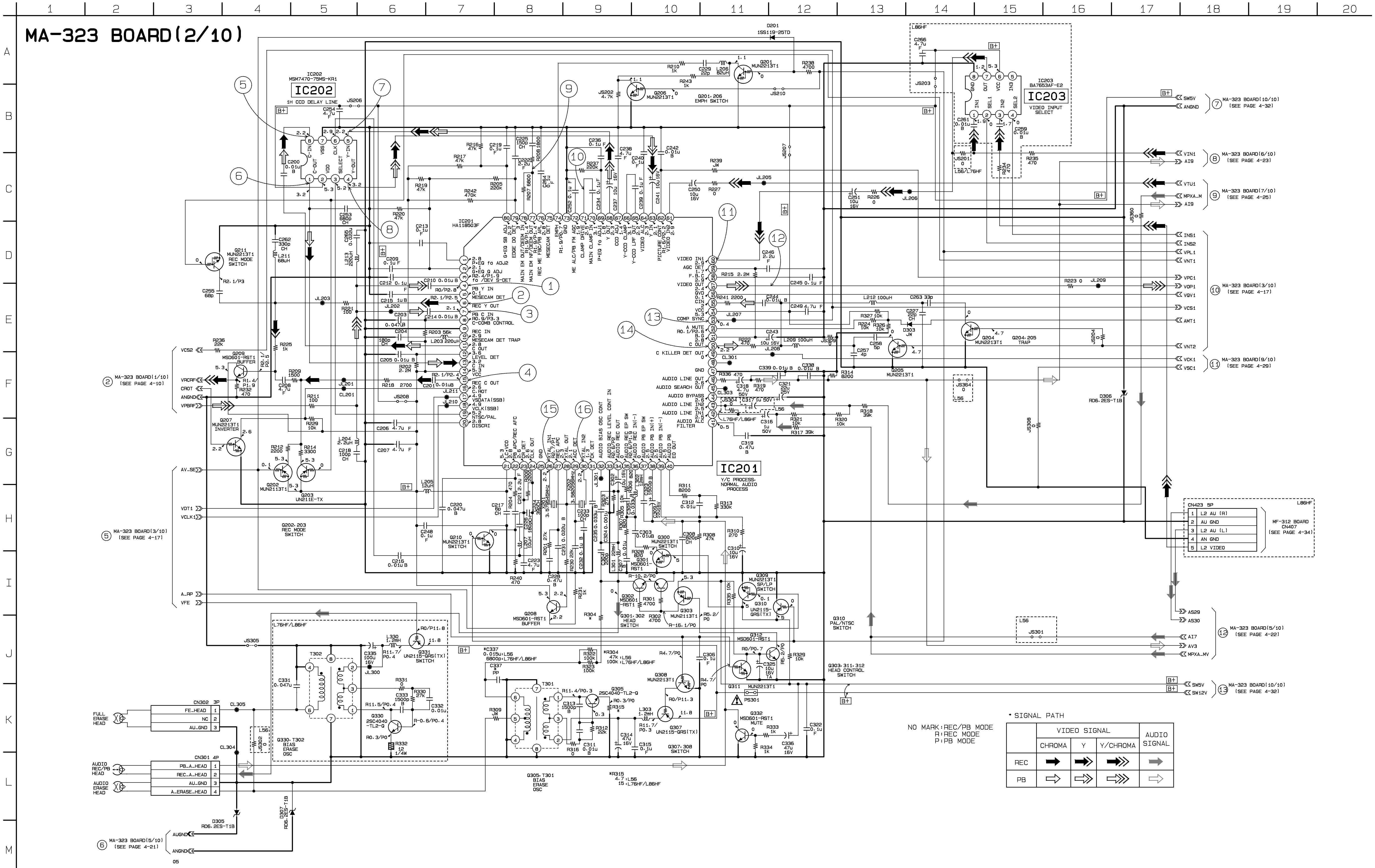
AC2
ARE
AC1

① MA-323 BOARD(5/10) (SEE PAGE 4-21)
② MA-323 BOARD(2/10) (SEE PAGE 4-11)
③ MA-323 BOARD(10/10) (SEE PAGE 4-32)
④ MA-323 BOARD(3/10) (SEE PAGE 4-17)

05

MA-323 (VIDEO, AUDIO) SCHEMATIC DIAGRAM **• See page 4-5 for printed wiring board.**

– Ref. No.: MA-323 board; 1,000 series –

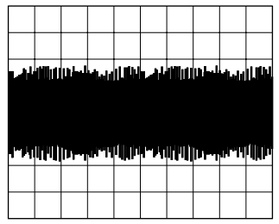

MA-323 BOARD(2/10)
IC202
MSM7470-75MS-KR1
1H CCD DELAY LINE
IC201
HA118503F
Y/C PROCESS, NORMAL AUDIO PROCESS
IC203
BA7653AF-E2
VIDEO INPUT SELECT
D201
1SS119-25TD
Q201
MUN2213T1
Q206
MUN2213T1
Q201, 206
EMPH SWITCH
Q211
MUN2213T1
REC MODE SWITCH
Q209
MSD601-RST1
BUFFER
Q207
MUN2213T1
INVERTER
Q202
MUN2113T1
Q203
UN211E-TX
Q202, 203
REC MODE SWITCH
Q210
MUN2213T1
SWITCH
Q208
MSD601-RST1
BUFFER
Q204
MUN2213T1
Q205
MUN2213T1
Q204, 205
TRAP
Q300
MUN2213T1
SWITCH
Q301
MSD601-RST1
Q302
MSD601-RST1
Q301, 302
HEAD SWITCH
Q303
MUN2113T1
Q309
MUN2213T1
SP/LP SWITCH
Q310
UN2115-QRS(TX)
Q310
PAL/NTSC SWITCH
Q312
MSD601-RST1
Q311
MUN2213T1
Q303, 311, 312
HEAD CONTROL SWITCH
Q308
MUN2213T1
Q307
UN2115-QRS(TX)
Q307, 308
SWITCH
Q305
2SC4040-TL2-Q
Q305, T301
BIAS ERASE OSC
Q330
2SC4040-TL2-Q
Q331
UN2115-QRS(TX)
SWITCH
Q330, T302
BIAS ERASE OSC
Q332
MSD601-RST1
MUTE
PS301
D305
RD6.2ES-T1B
D306
RD6.2ES-T1B
D307
RD6.2ES-T1B
L76HF/L86HF
L56/L76HF
L86HF
L56
*C337
0.015u:L56
6800p:L76HF/L86HF
*R304
47k:L56
100k:L76HF/L86HF
*R315
4.7:L56
15:L76HF/L86HF
CN302 3P
1 FE_HEAD
2 NC
3 AU_GND
FULL ERASE HEAD
CN301 4P
1 PB_A_HEAD
2 REC_A_HEAD
3 AU_GND
4 A_ERASE_HEAD
AUDIO REC/PB HEAD
AUDIO ERASE HEAD
CN423 5P
1 L2 AU (R)
2 AU GND
3 L2 AU (L)
4 AN GND
5 L2 VIDEO
MF-312 BOARD CN407 (SEE PAGE 4-34)
VCS2
VRCRF
CROT
ANGND
VPBRF
2 MA-323 BOARD(1/10) (SEE PAGE 4-10)
AV_SE
VDT1
VCLK1
A_RP
VFE
5 MA-323 BOARD(3/10) (SEE PAGE 4-17)
AUGND
ANGND
6 MA-323 BOARD(5/10) (SEE PAGE 4-21)
SW5V
ANGND
7 MA-323 BOARD(10/10) (SEE PAGE 4-32)
VIN1
AI9
8 MA-323 BOARD(6/10) (SEE PAGE 4-23)
VTU1
MPXA_M
AI9
9 MA-323 BOARD(7/10) (SEE PAGE 4-25)
INS1
INS2
VPL1
VNT1
VPC1
VOP1
VQV1
VCS1
AMT1
VNT2
10 MA-323 BOARD(3/10) (SEE PAGE 4-17)
VCK1
VSC1
11 MA-323 BOARD(9/10) (SEE PAGE 4-29)
AS29
AS30
AI7
AV3
MPXA_MV
12 MA-323 BOARD(5/10) (SEE PAGE 4-22)
SW5V
SW12V
13 MA-323 BOARD(10/10) (SEE PAGE 4-32)
NO MARK:REC/PB MODE
R:REC MODE
P:PB MODE
• SIGNAL PATH
VIDEO SIGNAL
CHROMA
Y
Y/CHROMA
AUDIO SIGNAL
REC
PB
05

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

VIDEO, AUDIO
MA-323 (2/10)

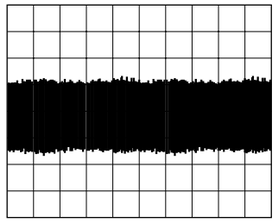
- **Waveforms**

❶ IC201 ④ PB



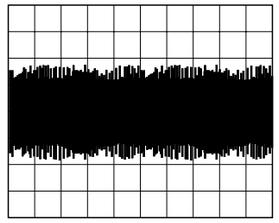
840 mVp-p (H)

❷ IC201 ⑥ REC



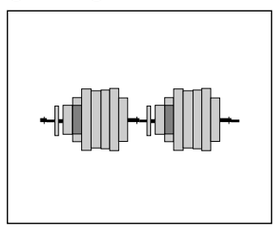
400 mVp-p (H)

❸ IC201 ⑦ PB



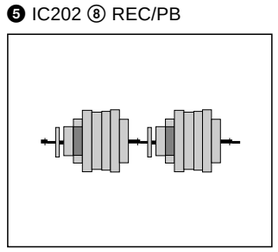
840 mVp-p (H)

❹ IC201 ⑮ REC



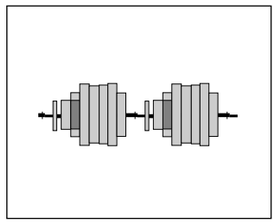
370 mVp-p (H)

❺ IC202 ⑧ REC/PB



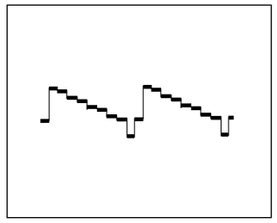
REC: 250 mVp-p (H)
PB : 300 mVp-p (H)

❻ IC202 ① REC/PB



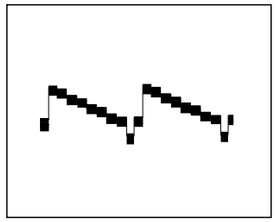
REC: 400 mVp-p (H)
PB : 500 mVp-p (H)

❼ IC202 ⑤ REC/PB



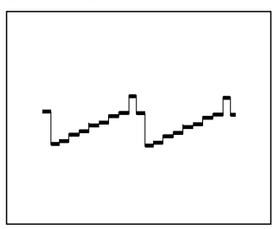
360 mVp-p (H)

❽ IC202 ④ REC/PB



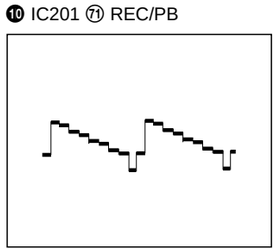
560 mVp-p (H)

❾ IC201 ⑰ REC/PB



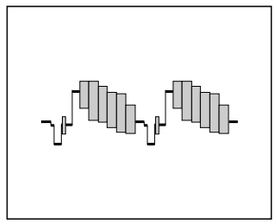
REC: 470 mVp-p (H)
PB : 260 mVp-p (H)

❿ IC201 ⑪ REC/PB



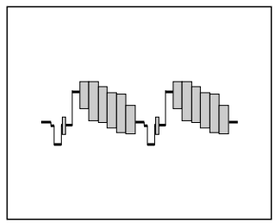
440 mVp-p (H)

⓫ IC201 ⑥⓪ REC



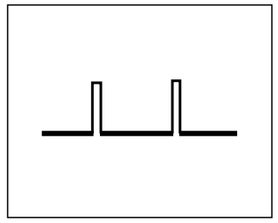
1 Vp-p (H)

⓬ IC201 ⑤⑦ REC/PB



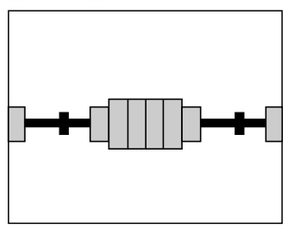
2.2 Vp-p (H)

⓭ IC201 ⑤③ REC/PB



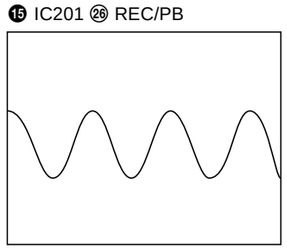
5 Vp-p (H)

⓮ IC201 ⑤⓪ PB



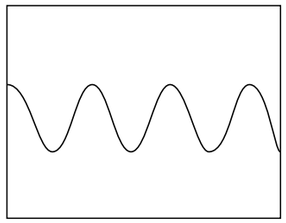
640 mVp-p (H)

⓯ IC201 ㉖ REC/PB



1.1 Vp-p (3.579545 MHz)

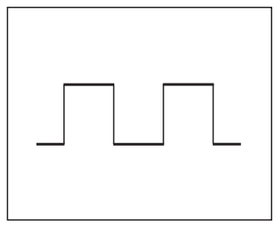
⓰ IC201 ㉚ REC/PB



1.1 Vp-p (3.582056 MHz)

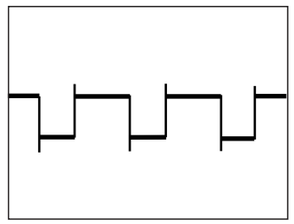
- **Waveforms**

❶ IC161 ㉔ REC/PB



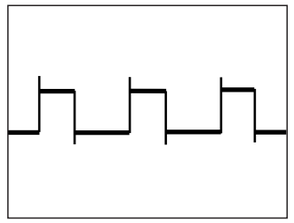
4.9 Vp-p (2 V)

❷ IC161 ㉛ REC



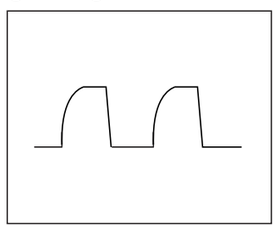
5 Vp-p (2 V)

❸ IC161 ㉜ REC



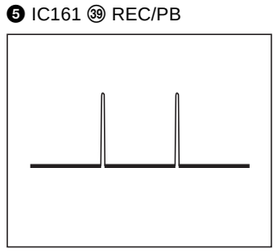
5 Vp-p (2 V)

❹ IC161 ㊳ REC/PB



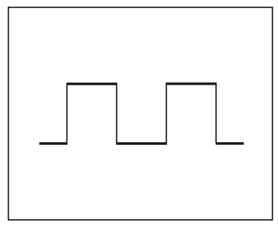
4.2 Vp-p (360 Hz)

❺ IC161 ㊴ REC/PB



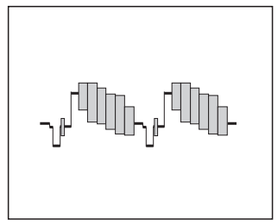
4.7 Vp-p (2 V)

❻ IC161 ㊵ REC/PB



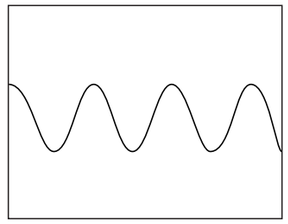
4 Vp-p (1 kHz)

❼ IC161 ㊸,㊺ REC/PB



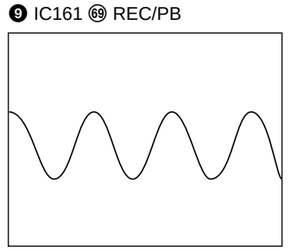
2 Vp-p (H)

❽ IC161 ㊷ REC/PB



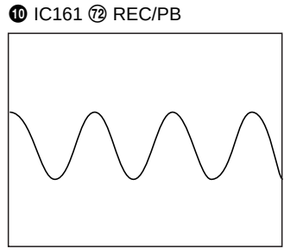
2.4 Vp-p (17.734475 MHz)

❾ IC161 ㊾ REC/PB



2.2 Vp-p (32.768 kHz)

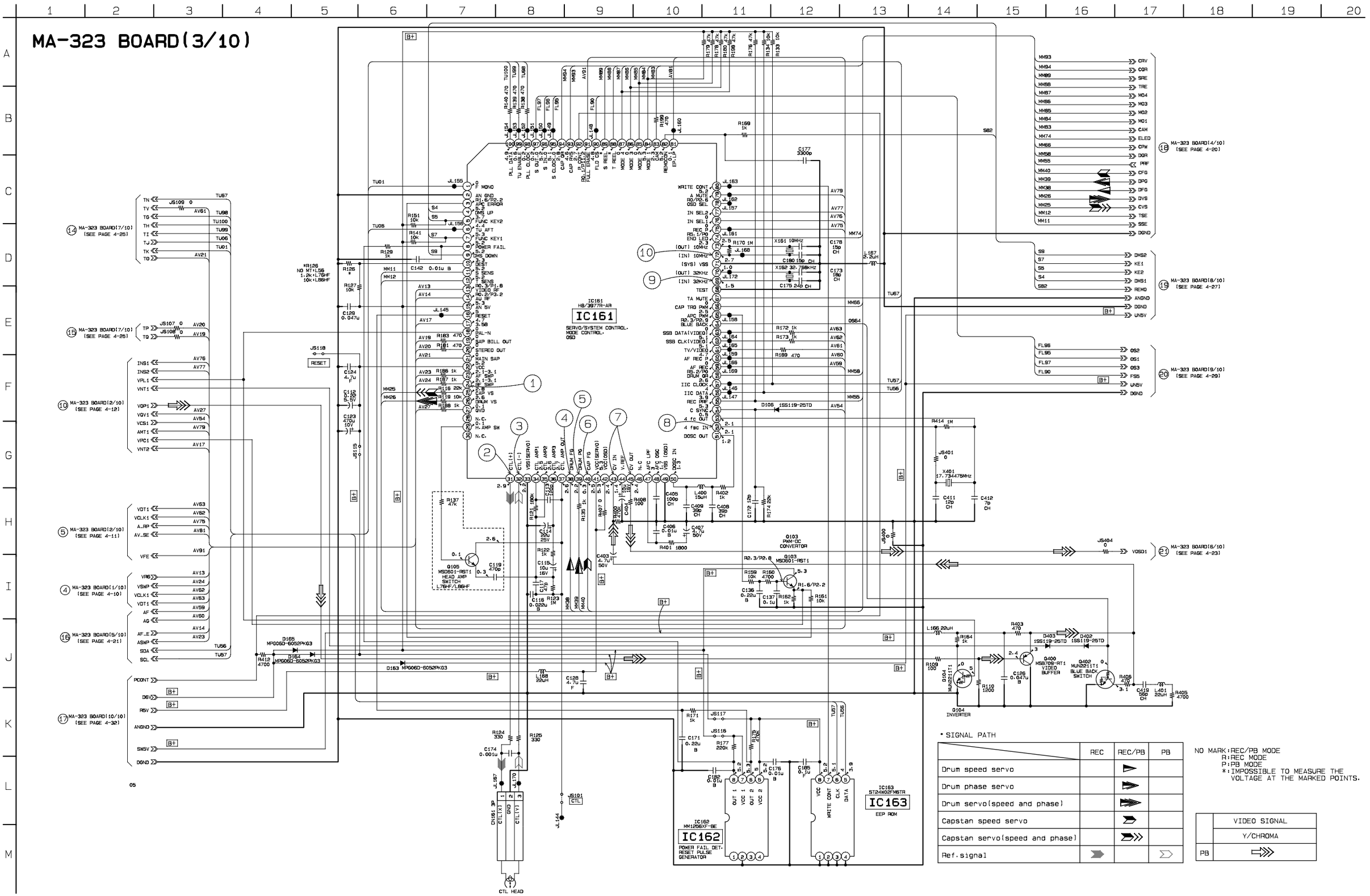
❿ IC161 ㉒ REC/PB



3.2 Vp-p (10 MHz)

MA-323 (SYSTEM CONTROL) SCHEMATIC DIAGRAM **• See page 4-5 for printed wiring board.**

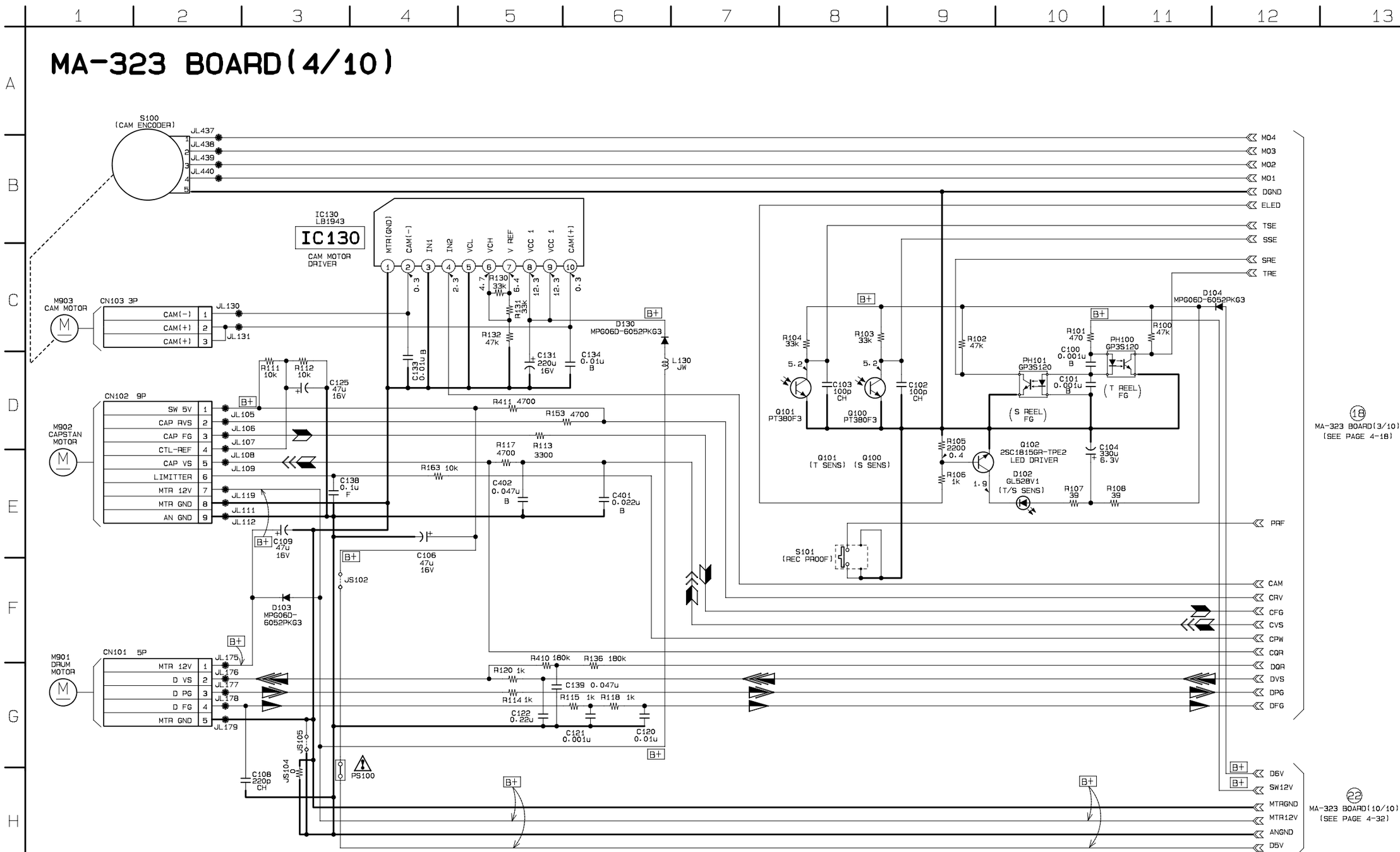
– Ref. No.: MA-323 board; 1,000 series –



MA-323 (SERVO CONTROL) SCHEMATIC DIAGRAM • See page 4-5 for printed wiring board.

– Ref. No.: MA-323 board; 1,000 series –

MA-323 BOARD(4/10)



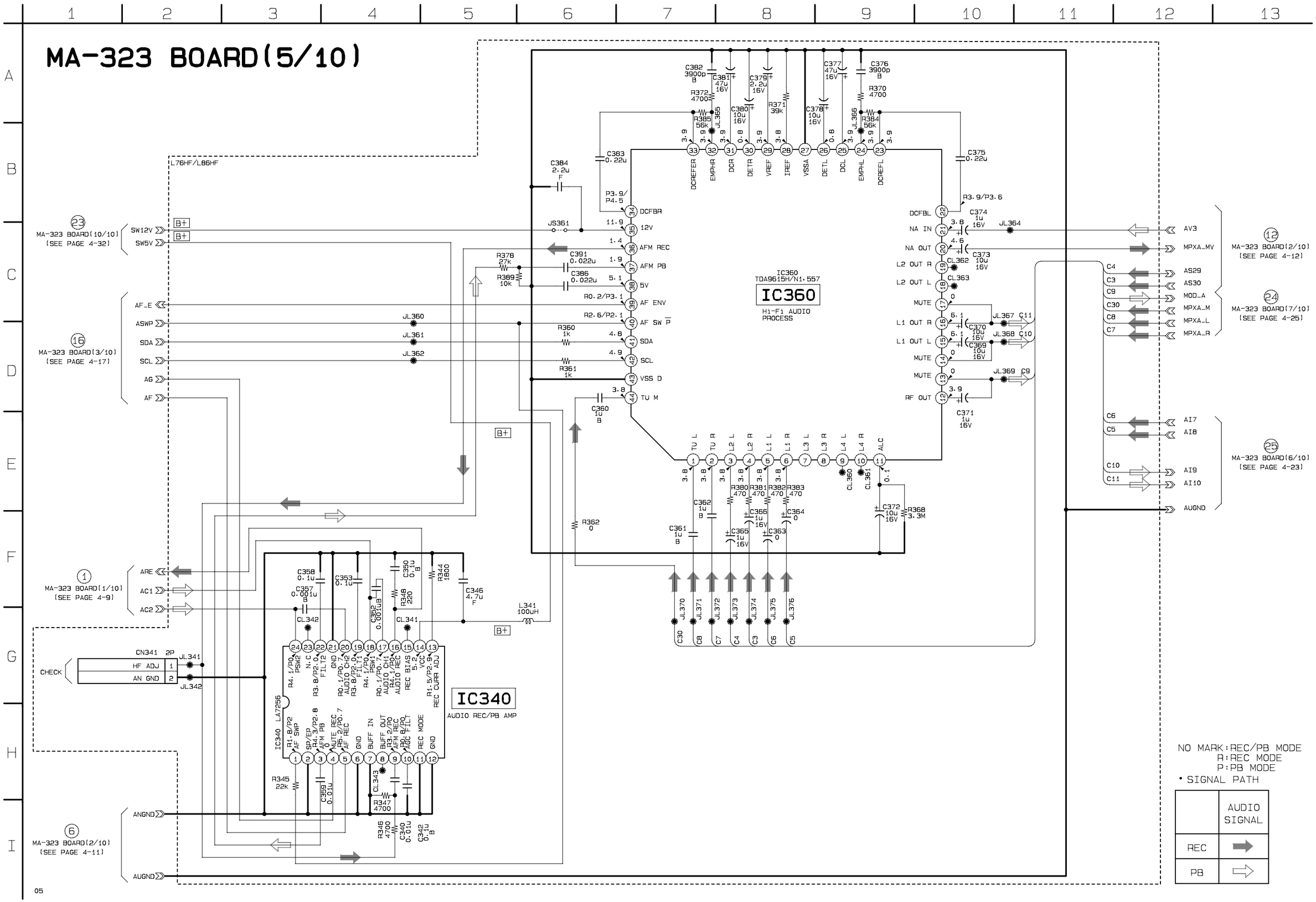
Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

NO MARK:REC/PB MODE
• SIGNAL PATH

	REC	REC/PB	PB
Drum speed servo		▷	
Drum phase servo		▷	
Drum servo(speed and phase)		▷	
Capstan speed servo		▷	
Capstan servo(speed and phase)		▷	

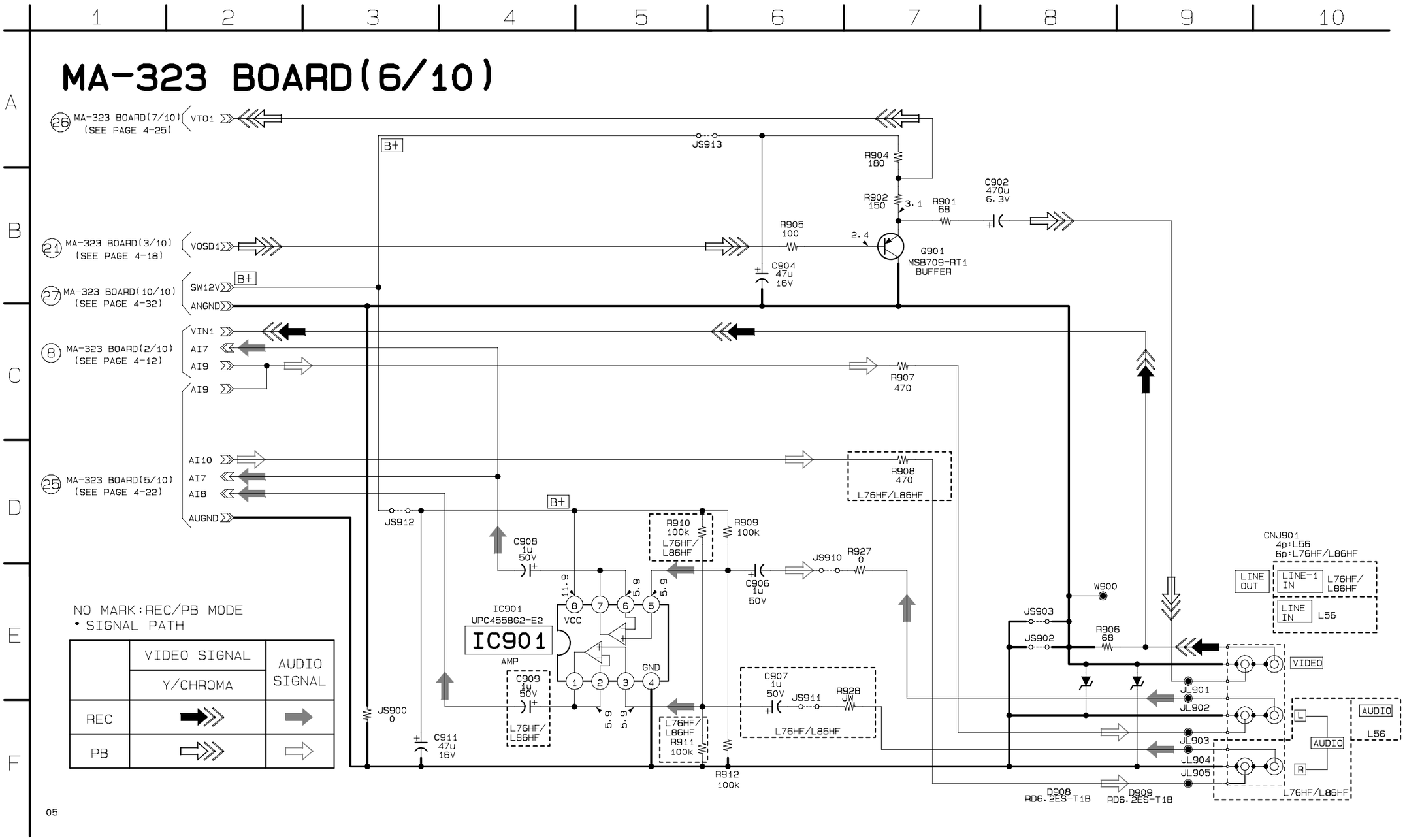
MA-323 (Hi-Fi AUDIO) SCHEMATIC DIAGRAM **• See page 4-5 for printed wiring board.**

– Ref. No.: MA-323 board; 1,000 series –



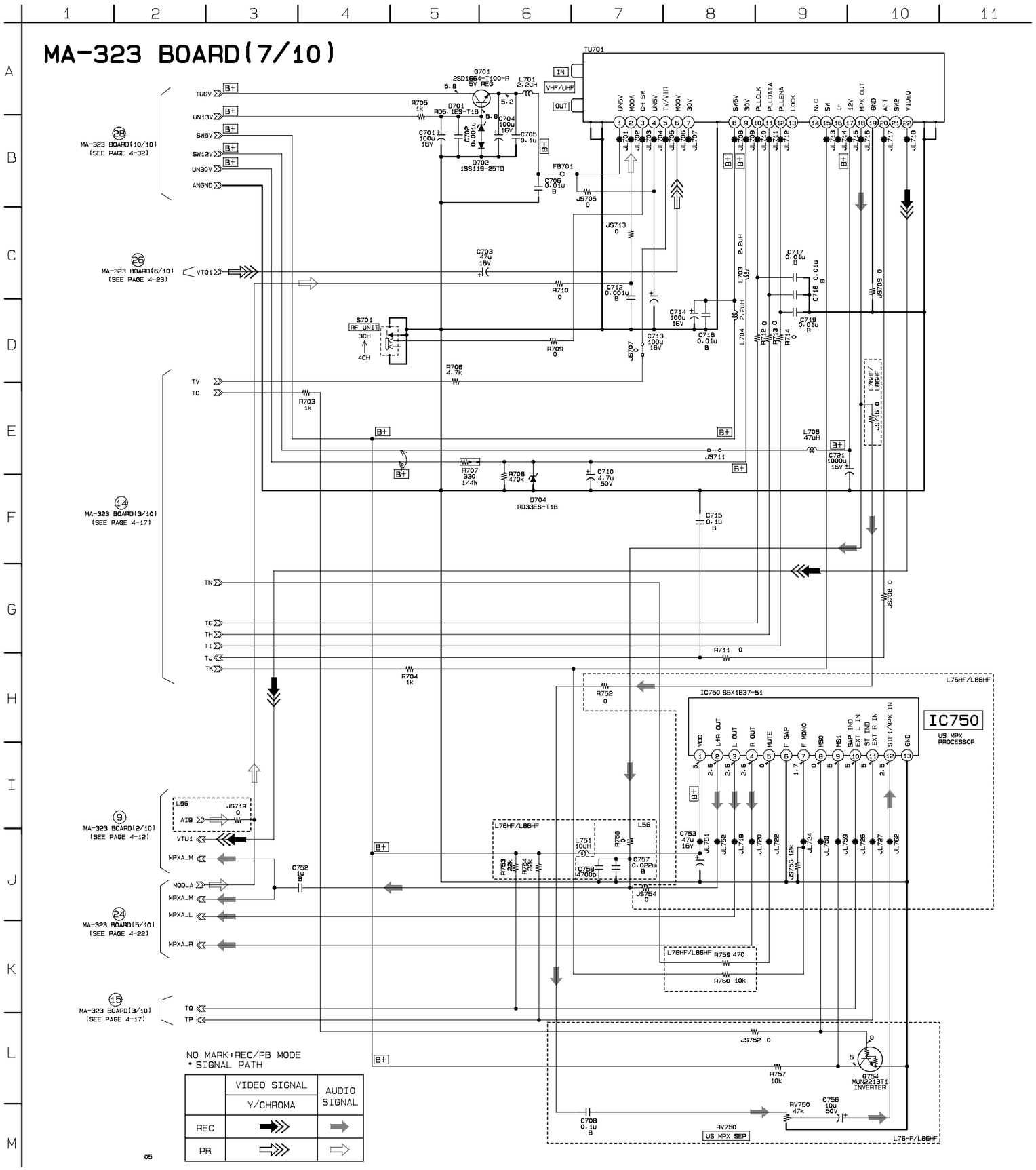
MA-323 (IO) SCHEMATIC DIAGRAM **• See page 4-5 for printed wiring board.**

– Ref. No.: MA-323 board; 1,000 series –



MA-323 (TUNER) SCHEMATIC DIAGRAM **• See page 4-5 for printed wiring board.**

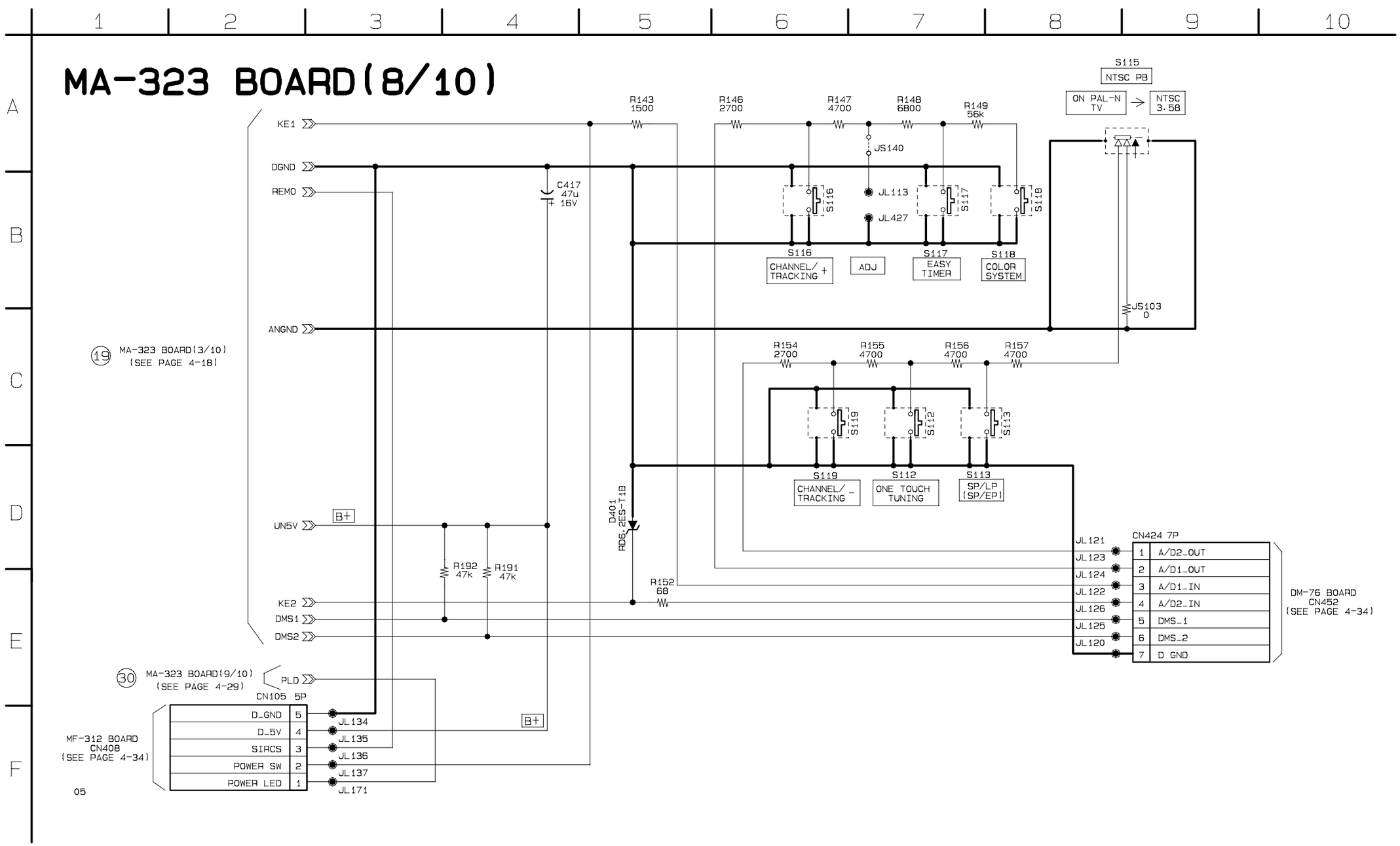
– Ref. No.: MA-323 board; 1,000 series –



TUNER
MA-323 (7/10)

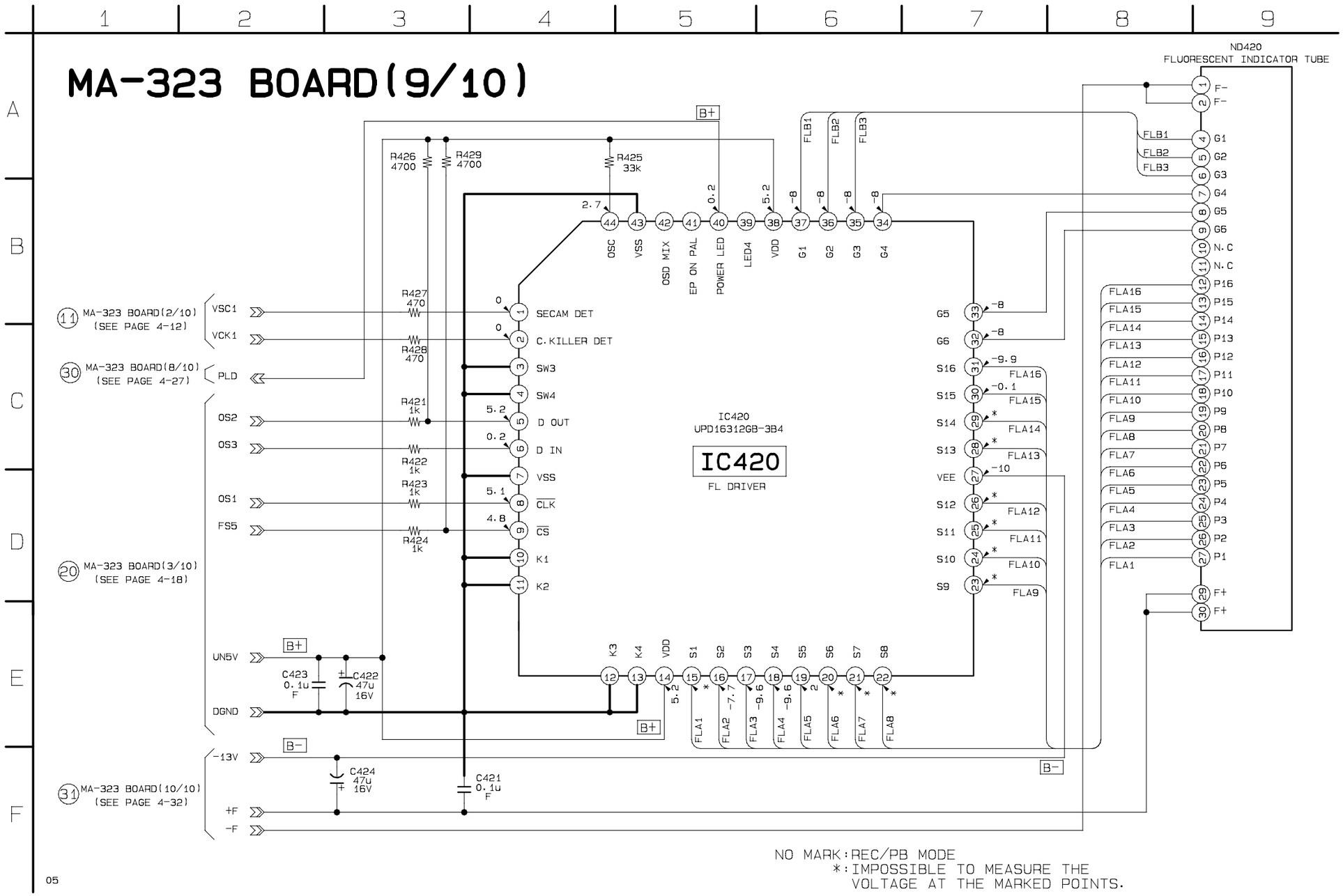
MA-323 (MODE CONTROL) SCHEMATIC DIAGRAM **• See page 4-5 for printed wiring board.**

– Ref. No.: MA-323 board; 1,000 series –



MA-323 (FL DRIVER) SCHEMATIC DIAGRAM **• See page 4-5 for printed wiring board.**

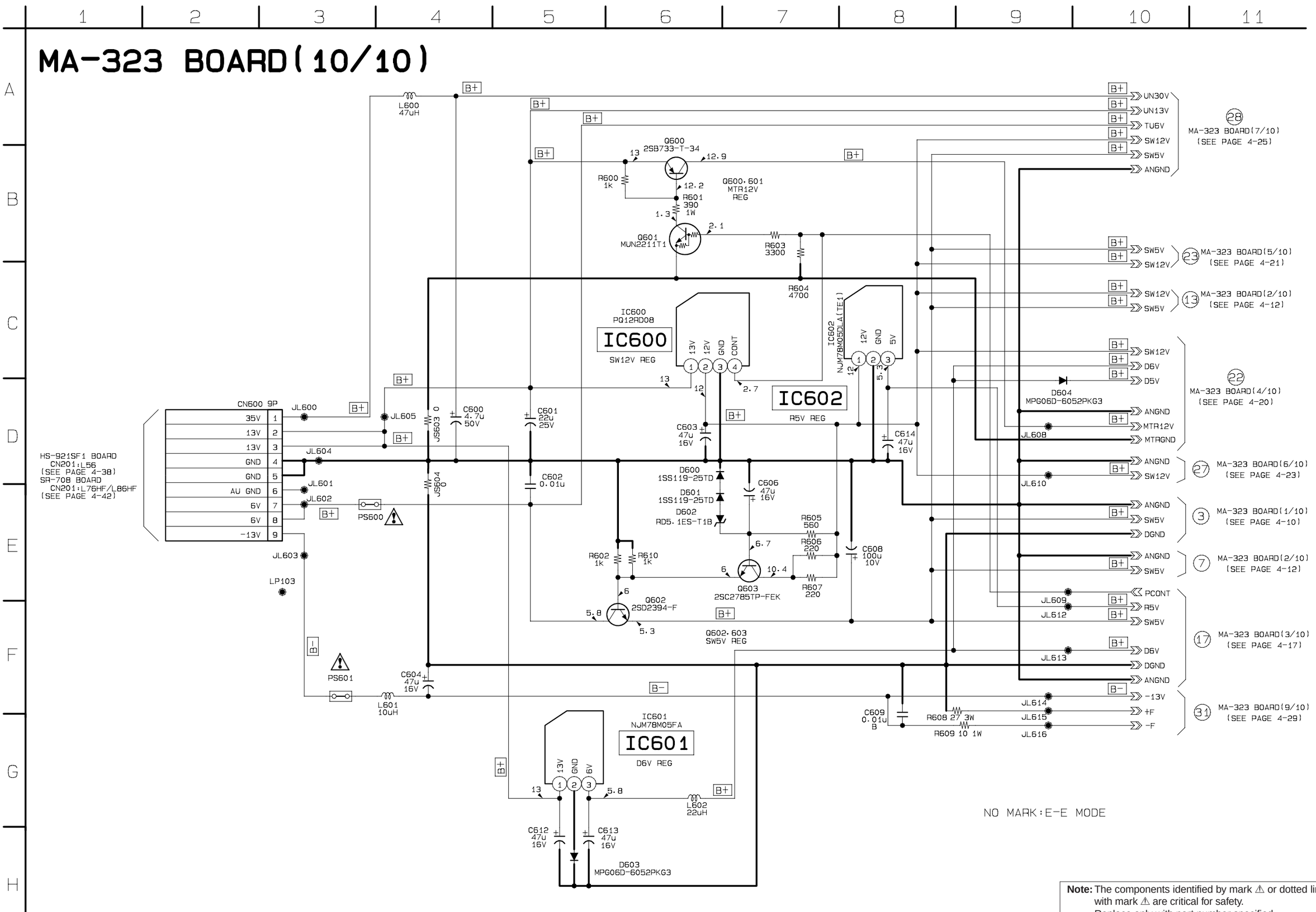
– Ref. No.: MA-323 board; 1,000 series –



MA-323 (POWER SUPPLY) SCHEMATIC DIAGRAM • See page 4-5 for printed wiring board.

– Ref. No.: MA-323 board; 1,000 series –

MA-323 BOARD(10/10)

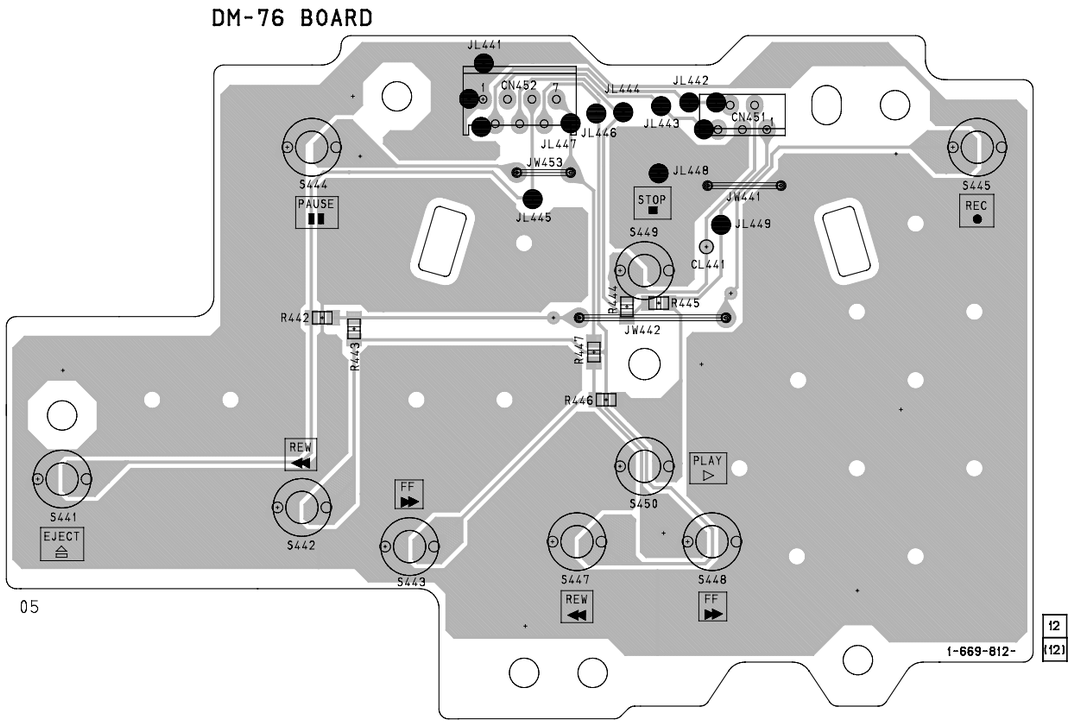


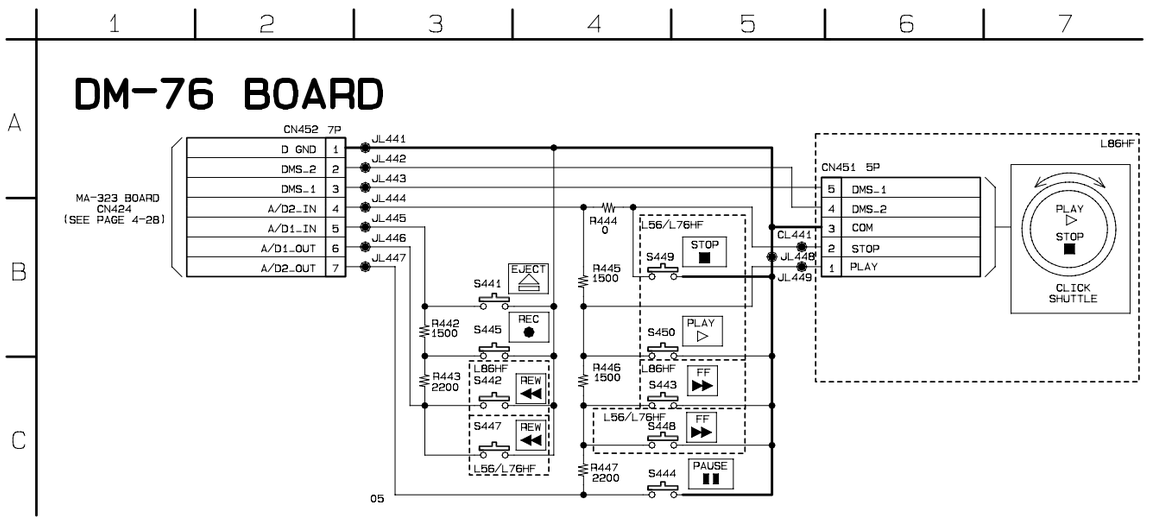
Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

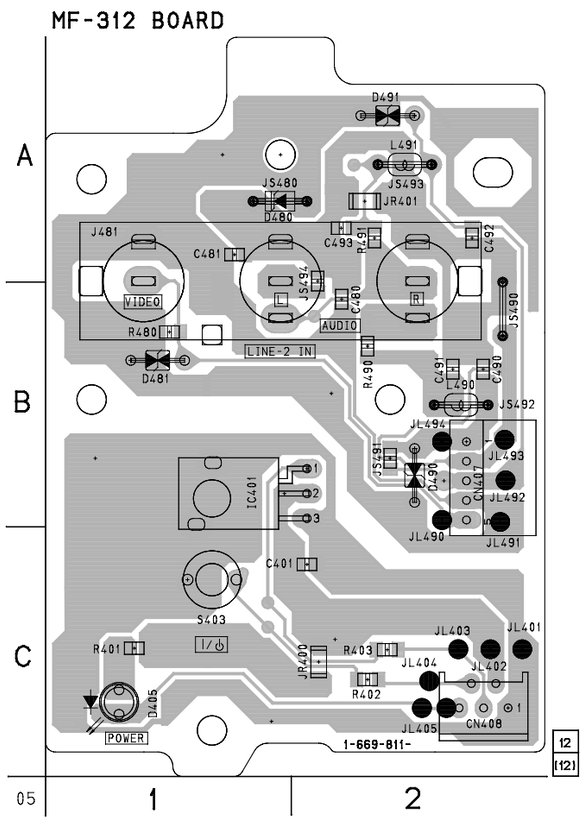
DM-76 (MODE CONTROL), MF-312 (MODE CONTROL, FRONT IN) PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

– Ref. No.: DM-76 board, MF-312 board; 2,000 series –

There are few cases that the part isn't mounted in this model is printed on this diagram.

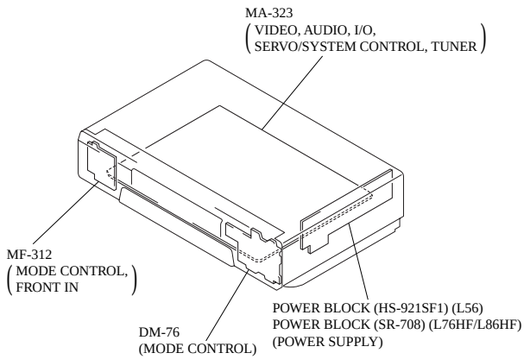


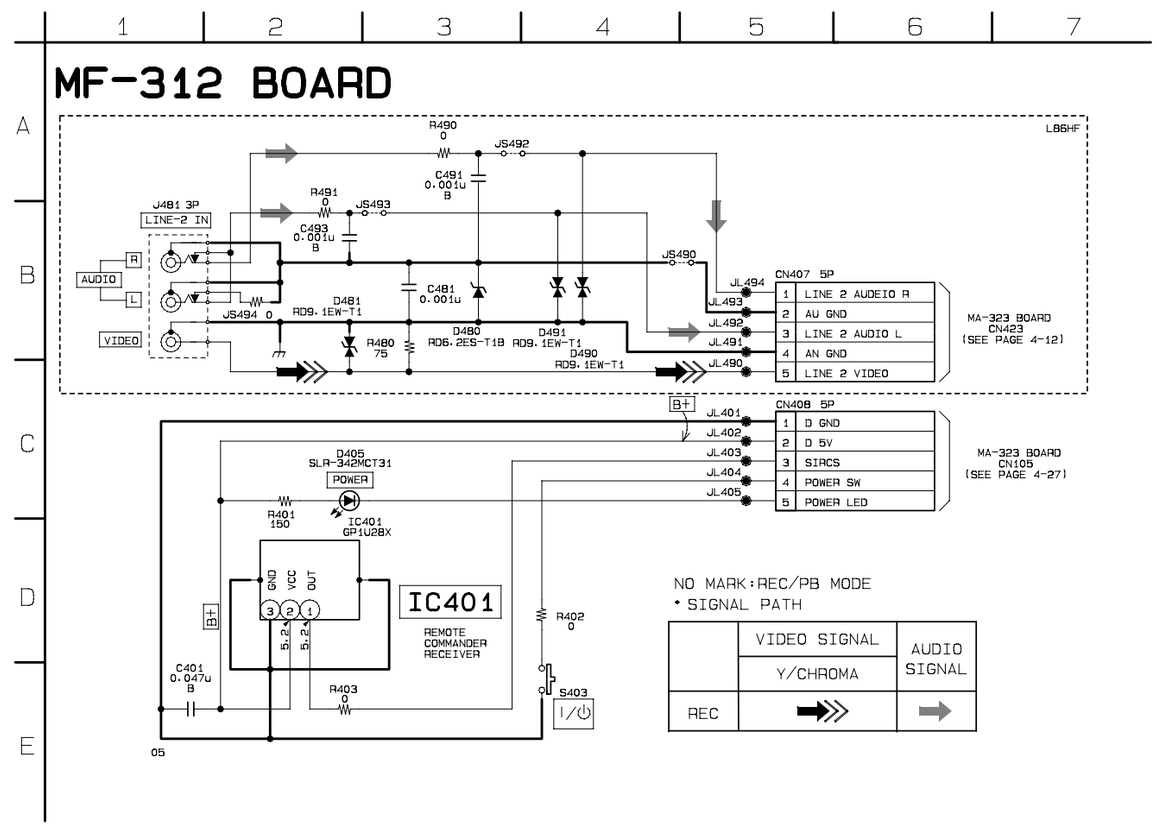




MF-312 BOARD

CN407	B-2
CN408	C-2
D405	C-1
D480	A-1
D481	B-1
D490	B-2
D491	A-2
IC401	B-1

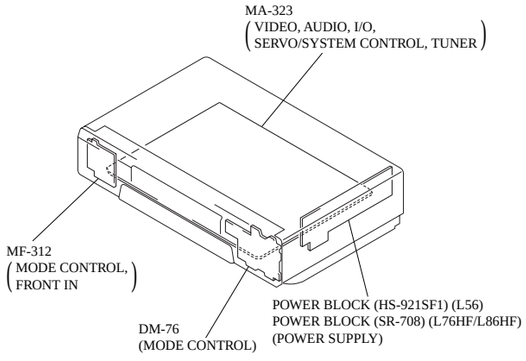




HS-921SF1 (POWER SURRLY) PRINTED WIRING BOARD

– Ref. No.: HS-921SF1 board; 3,000 series –

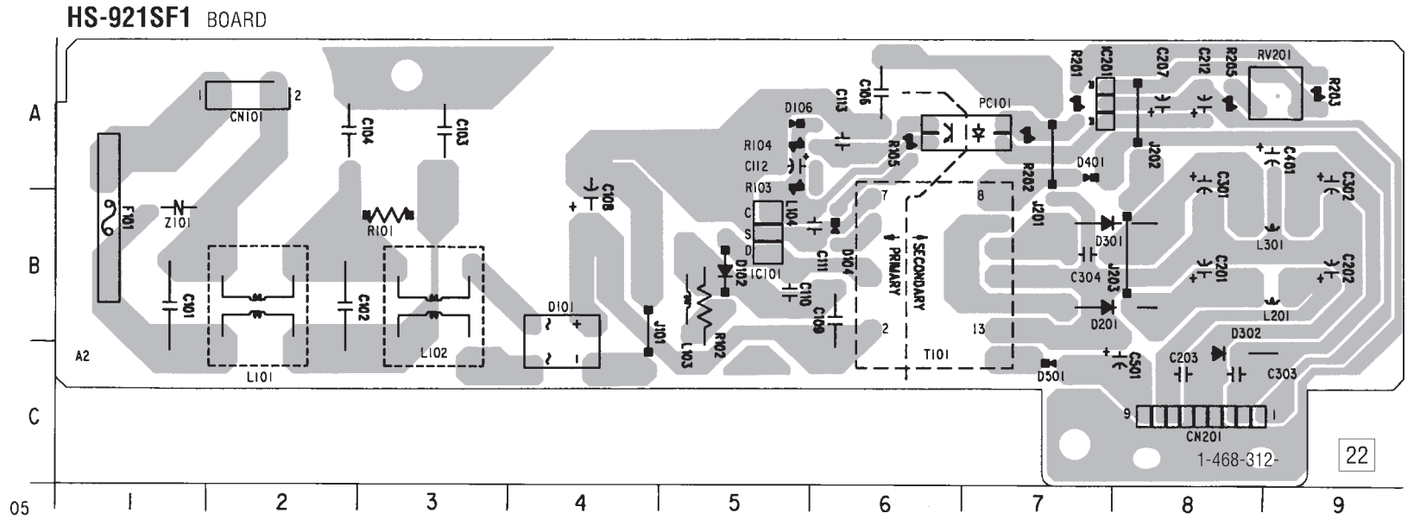
– SLV-L56 –



There are few cases that the part isn't mounted in this model is printed on this diagram.

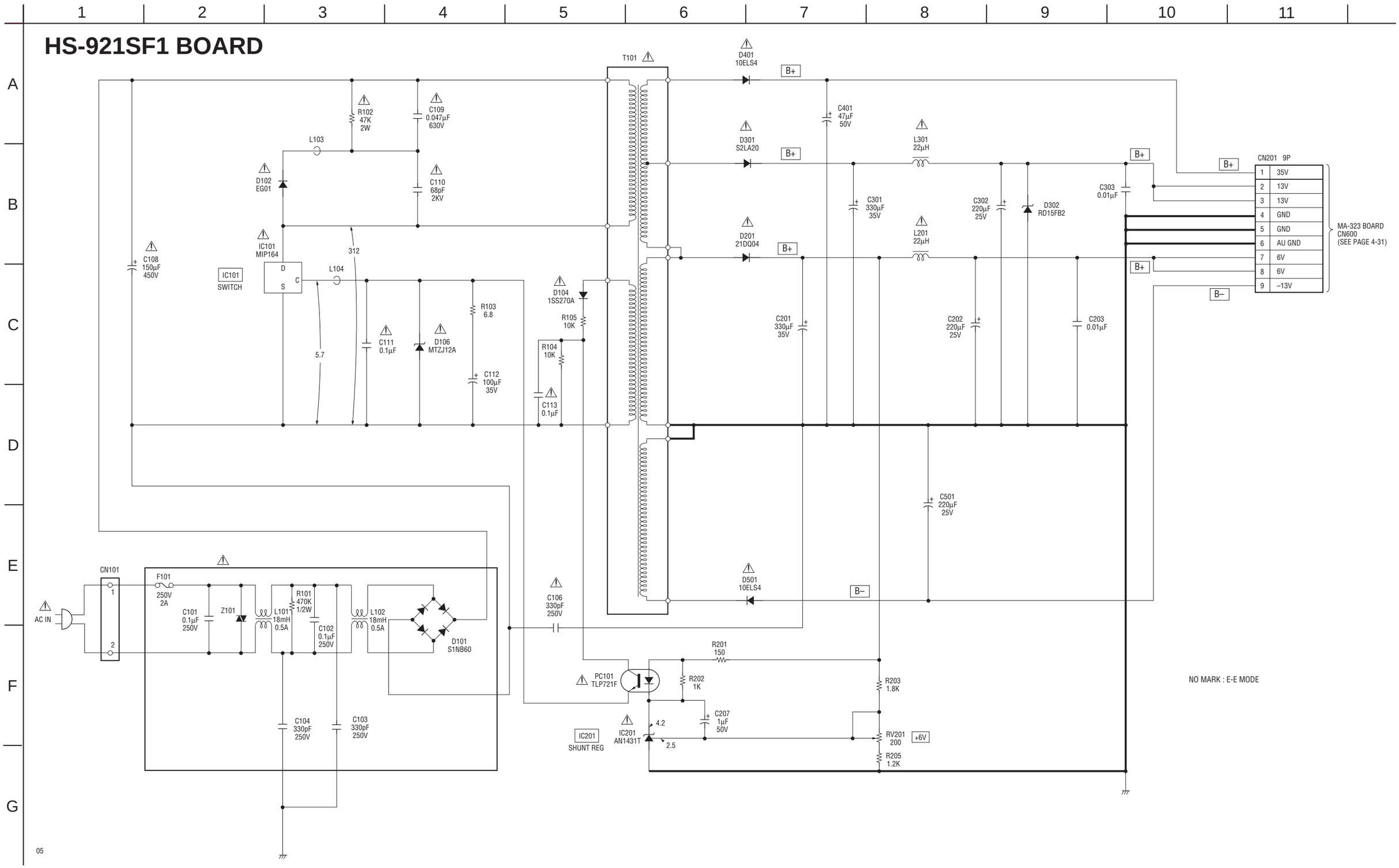
HS-921SF1 BOARD

CN101	A-2
CN201	C-8
D101	B-4
D102	B-5
D104	B-6
D106	A-5
D201	B-7
D301	B-7
D302	C-8
D401	A-7
D501	C-7
IC101	B-5
IC201	A-7



HS-921SF1 (POWER SUPPLY) SCHEMATIC DIAGRAM
– Ref. No.: HS-921SF1 board; 3,000 series –

– SLV-L56 –

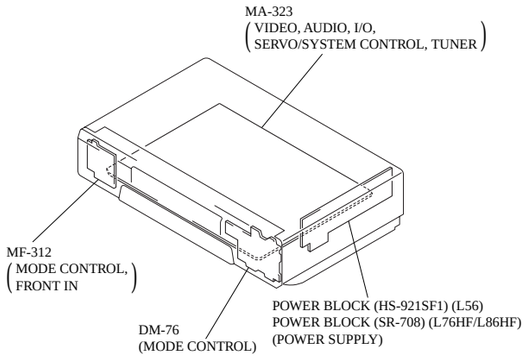


Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

SR-708 (POWER SUPPLY) PRINTED WIRING BOARD

– Ref. No.: SR-708 board; 4,000 series –

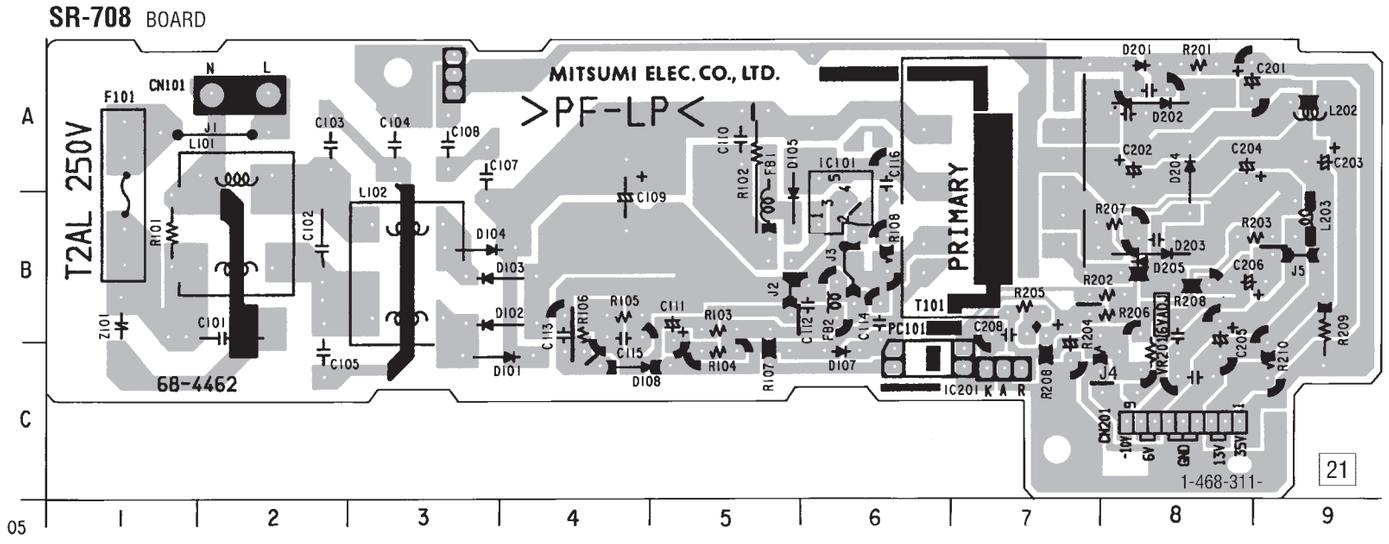
– SLV-L76HF/L86HF –



There are few cases that the part isn't mounted in this model is printed on this diagram.

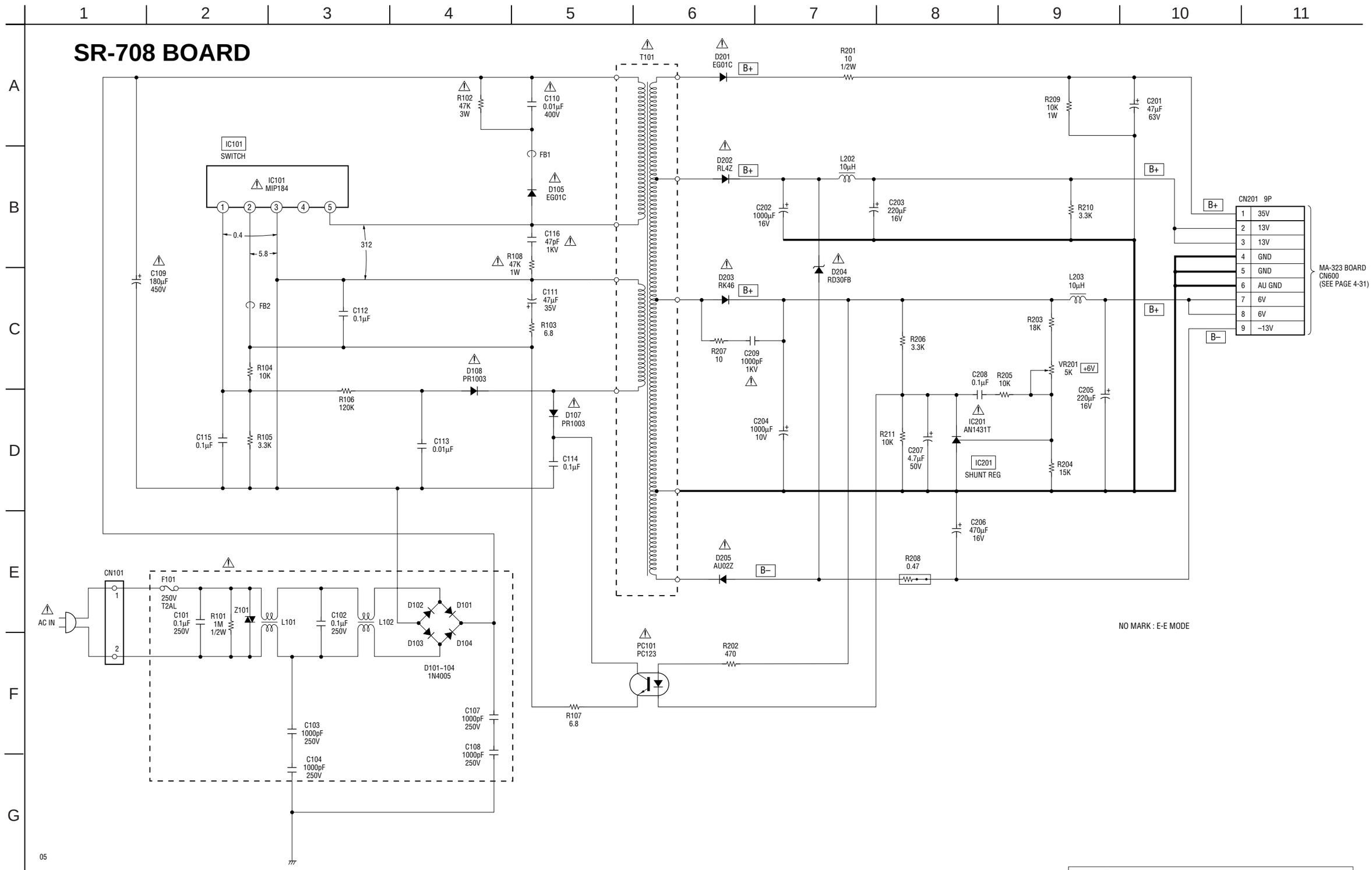
SR-708 BOARD

CN101	A-2
CN201	C-8
D101	C-3
D102	B-3
D103	B-3
D104	B-3
D105	B-5
D107	C-6
D108	C-4
D201	A-8
D202	A-8
D203	B-8
D204	A-8
D205	B-8
IC101	B-6
IC201	C-7



SR-708 (POWER SUPPLY) SCHEMATIC DIAGRAM
– Ref. No.: SR-708 board; 4,000 series –

– SLV-L76HF/L86HF –



Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

5-1. SYSTEM CONTROL – VIDEO BLOCK INTERFACE (MA-323 BOARD IC161)

Signal	Pin No.	I/O	STOP/ FF/ REW	TAPE THREAD-ING	TAPE UNTHREAD-ING	PB	PB • PAUSE	SLOW	× 2	CUE	REVIEW	REC	REC • PAUSE
RF SWP	MA-323 IC161㉔	O	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1
QVD	MA-323 IC161㉗	O	L	L	L	*2	*3	*3	*3	*3	*3	L	L
C SYNC	MA-323 IC161㊹	I	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4

∗1. 25 Hz pulse with 50% duty cycle. Synchronized with rotation of drum.
∗2. Normal PB "L". V period "H" pulse when ×1.
∗3. V period "H" pulse.
∗4. Composite Sync signal (positive polarity).

5-2. SYSTEM CONTROL – SERVO PERIPHERAL CIRCUIT INTERFACE (MA-323 BOARD IC161)

Signal	Pin No.	I/O	STOP	FF	REW	TAPE THREAD-ING	TAPE UNTHREAD-ING	PB	PB • PAUSE	SLOW	× 2	CUE	REVIEW	REC	REC • PAUSE
CAP QR	MA-323 IC161㊹	O	Hi-Z	Hi-Z	Hi-Z	Hi-Z	Hi-Z	Hi-Z	Hi-Z	*2	Hi-Z	Hi-Z	Hi-Z	Hi-Z	Hi-Z
DRUM PG	MA-323 IC161㊴	I	*3	*1	*1	*4	*4	*1	*1	*1	*1	*1	*1	*1	*1
DRUM FG	MA-323 IC161㊳	I	*3	*6	*6	*4	*4	*6	*6	*6	*6	*6	*6	*6	*6
CAP FG	MA-323 IC161㊵	I	H/L	*5	*5	*4	*4	*5	H/L	*5	*5	*5	*5	*5	H/L
CAP VS	MA-323 IC161㉕	O	*7	*7	*7	*7	*7	*8	*7	*7	*8	*8	*8	*8	*7
DRUM VS	MA-323 IC161㉖	O	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9

∗1. 25 Hz (PAL-N), 30 Hz (NTSC) pulse.
∗2. Pulse at tape running.
∗3. "L" when drum rotation stop.
∗4. Unstable period pulse.
∗5. Pulse of period in proportion to tape speed.
∗6. 300 Hz (PAL-N), 360 Hz (NTSC) pulse.
∗7. Pulse at tape running.
∗8. Approx. 2 msec period "H" or "L" pulse.
∗9. Approx. 1.5 msec period "H" or "L" pulse.

5-3. SYSTEM CONTROL – MECHANISM BLOCK INTERFACE (MA-323 BOARD IC161)

Signal	Pin No.	I/O	EJECTED	CASSETTE LOADING	CASSETTE UNLOADING	TAPE THREAD-ING	TAPE UNTHREAD-ING	STOP	FF	REW	PB	PB • PAUSE	SLOW	×2	CUE	REVIEW	REC	REC • PAUSE
CAM	MA-323 IC161㊸	O	Hi-Z	H	L	H	L	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7
MODE 1	MA-323 IC161㊹	I	H	L	L	*1	*1	H	H	H	H	H	H	H	H	L	H	H
MODE 2	MA-323 IC161㊺	I	H	L	L	*1	*1	H	H	H	L	L	L	L	L	L	L	L
MODE 3	MA-323 IC161㊻	I	L	L	L	*1	*1	H	L	L	L	L	L	L	L	H	L	L
MODE 4	MA-323 IC161㊼	I	L	H	H	*1	*1	L	H	H	L	L	L	L	L	L	L	L
REC PRF	MA-323 IC161㊺	I	H	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2
T REEL	MA-323 IC161㊽	I	H/L	H/L	H/L	H/L	H/L	H/L	*3	*3	*3	H/L	*3	*3	*3	*3	*3	H/L
S REEL	MA-323 IC161㊾	I	H/L	H/L	H/L	*3	*3	H/L	*3	*3	*3	H/L	*3	*3	*3	*3	*3	H/L
END LED	MA-323 IC161㊹	O (O.D)	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4
CAP RVS	MA-323 IC161㊸	I	L			H	L	H/L	H	L	H	H	H	H	H	L	H	H
T SENS	MA-323 IC161⑫	I	*4	*4	*4	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6
S SENS	MA-323 IC161⑪	I	*4	*4	*4	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6

∗1. Uncertainty.
∗2. “L” when erasing protection tab is bent, “H” when not bent.
∗3. Pulse of period in proportion to reel rotating speed.
∗4. Approx. 2 msec period “H” pulse.
∗5. Pulse at tape running.
∗6. Normally “L”. 2 msec period “H” pulse when tape top or tape end is detected.
∗7. When transition to UNLOADING direction: L.
When transition to LOADING direction: H.
When CAM motor is stopped: Hi-Z.

5-4. SYSTEM CONTROL – AUDIO BLOCK INTERFACE (MA-323 BOARD IC161)

Signal	Pin No.	I/O	STOP/ FF/ REW	TAPE LOADING	TAPE UNLOADING	PB	PB • PAUSE	SLOW	× 2	CUE	REVIEW	REC	REC • PAUSE
AU RF	MA-323 IC161⑭	I	AF RF envelope signal input terminal for automatic tracking.										
A MUTE	MA-323 IC161⑲	O (O.D)	Hi-Z	Hi-Z	Hi-Z	Hi-Z	H	H	H	H	H	L	L
AF REC P	MA-292 IC161⑩	O	H	H	H	H	H	H	H	H	H	L	H
AF SWP	MA-292 IC161㉓	O	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1
$\overline{\text{FULL ERASE}}$	MA-292 IC161⑨	O (O.D)	H	H	H	H	H	H	H	H	H	L	H
AF REC	MA-323 IC161⑨	O	L	L	L	L	L	L	L	L	L	H	H
REC P	MA-323 IC161⑮	O	L	L	L	L	L	L	L	L	L	H	L

*1. 25 Hz (PAL-N), 30 Hz (NTSC) 50% duty pulse approx. 5 msec delayed from RF SWP.

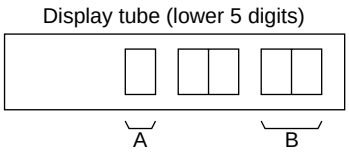
5-5. SERVO/SYSTEM/TIMER/TUNER CONTROL MICROPROCESSOR PIN FUNCTION (MA-323 BOARD IC161)

Pin No.	Pin Name	I/O	Function
1	F MONO	O	TUNER Audio select signal
2	AN GND	–	Analog Ground
3	APC ERROR	I	APC ERROR Voltage input
4	DMS UP	I	Click Shuttle fowared/reverse signal input (DMS models only)
5	FUNC. KEY2	I	Function Key Analog voltage input
6	TU AFT	I	AFT (Auto fine tuning signal input)
7	FUNC. KEY1	I	Function Key Analog voltage input
8	POWER FAIL	I	Power failure detect signal input
9	DMS DOWN	I	Click Shuttle fowared/reverse signal input (DMS models only)
10	DEST	I	Destination set
11	S SENS	I	Supply end sensor signal input
12	T SENS	I	Take up end sensor signal input
13	VIDEO RF	I	Video RF Envelop input
14	AU RF	I	Hifi Audio Envelop input
15	AN 5V	–	Power supply
16	RESET	I	RESET signal input
17	3.58	O	NTSC color freq. judge signal
18	PAL-N	O	“H”: PAL-N (Video block control signal)
19	SAP BILL OUT	I	MAIN/SAP judge input
20	STEREO OUT	I	STEREO/MONO judge input
21	MAIN/SAP	O	MAIN/SAP select signal
22	VCC	–	Power supply
23	AF SWP	O	AF switching pulse output
24	RF SWP	O	RF switching pulse output
25	CAP VS	O	Capstan error signal output
26	DRUM VS	O	Drum motor error signal output
27	QVD	O	Quasi VD pulse output
28	N.C.	–	Not used
29	H. AMPSW	O	“H”: A-DUB mode (CTL Amp. Gain. Coutrol)
30	N.C.	–	Not used
31	CTL (+)	I/O	CTL head signal Input/Output (REC mode)
32	CTL (–)	I/O	CTL head signal Input/Output (REC mode)
33	VSS (SERVO)	–	Ground
34	CTL-AMP1	I	CTL Amp. Coutrol (Gain set)
35	CTL-AMP2	I	CTL Amp. Coutrol (Gain set)
36	CTL-AMP3	I	CTL Amp. Coutrol (Gain set)
37	CTL-AMP OUT	O	CTL Amp. Output (For Check)
38	DRUM FG	I	Drum FG Schmitt amp. input
39	DRUM PG	I	Drum PG Schmitt amp. input
40	CAP FG	I	Capstan FG Schmitt input
41	VCC (SERVO)	–	Power supply
42	VCC(OSD)	–	Power supply
43	CV IN	I	Composite Video signal input
44	VREF	I	Reference bias and clamp bias power pin
45	CV OUT	O	Composite Video signal output
46	N.C.	–	Not used
47	AFC LPF	I	AFC LPF pin
48	AFC OSC	I	AFC oscillator pin
49	VSS (OSD)	–	Ground
50	DOSC-IN	I	OSD dot clock oscillator (input)

Pin No.	Pin Name	I/O	Function
51	DOSC-OUT	O	OSD dot clock oscillator (output)
52	4FSC-IN	I	OSD 4fsc oscillator terminal (input)
53	4FSC-OUT	O	OSD 4fsc oscillator terminal (output)
54	CSYNC	I	Composite Sync signal input
55	REC PRF	I	Erasing protection tab. Cassette in detection
56	IIC DATA	O	EEP ROM, Hifi IC, Tuner/Serial communication signal (IIC DATA)
57	IIC CLOCK	O	EEP ROM, Hifi IC, Tuner/Serial communication signal (IIC CLOCK)
58	DRUM QR	O	Drum motor step driving
59	AF REC	O	“H” output when Hifi audio REC
60	AF REC P	O	“L” output when Hifi audio REC pause
61	TV/VIDEO	O	RF output control
62	SSB CLOCK (VIDEO)	O	Video, Video Amp. Serial communication signal (CLOCK)
63	SSB DATA (VIDEO)	O	Video, Video Amp. Serial communication signal (DATA)
64	BLUE BACK	O	OSD block control signal output
65	APC PWM	O	APC PWN signal
66	CAP TRQ PWM	O	Capstan TRQ PWN output
67	TA MUTE	O	“H” output when Tuner mute
68	TEST	I	Fixed to Ground
69	32kHz (IN)	I	Timer Clock terminal (32kHz)
70	32kHz (OUT)	O	Timer Clock terminal (32kHz)
71	VSS	–	Ground
72	10MHz (IN)	I	System clock terminal (10MHz)
73	10MHz (OUT)	O	System clock terminal (10MHz)
74	END LED	O	Top/End LED ON/OFF control
75	REC P	O	“L” output when REC pause mode
76	IN SEL 1	O	LINE-INPUT selection control signal-1
77	IN SEL 2	O	LINE-INPUT selection control signal-2
78	OSD SEL	O	OSD X'tal select signal (PAL/NTSC_)
79	A MUTE	O	“H” Audio mute signal outout
80	WRITE CONT	O	EEPROM write timing control
81	EP. LP	O	“H” : “LP/EP” mode
82	REMOCON	I	Remote control signal (SIRCS) input
83	CAM	O	CAM motor control
84	MODE 1	I	Mechanism section CAM encoder input (data1)
85	MODE 2	I	Mechanism section CAM encoder input (data2)
86	MODE 3	I	Mechanism section CAM encoder input (data3)
87	MODE 4	I	Mechanism section CAM encoder input (data4)
88	T REEL	I	T side reel FG input
89	S REEL	I	S side reel FG input
90	FLD CS	O	FIP driver chip select signal output
91	$\overline{\text{FULL ERASE}}$	O	Full erase head on/off control signal
92	P CONT	O	Power Supply control signal
93	CAP RVS	O	Capstan reverse control signal H when Reverse
94	CAP QR	O	Capstan step driving
95	S CLOCK 0	O	Serial communication signal (Serial clock)
96	S IN 0	I	Serial communication signal (Data input)
97	S OUT 0	O	Serial communication signal (Data output)
98	PLL CLOCK	O	TUNER PLL clock
99	TU ENABLE	O	TUNER PLL signal chip select
100	PLL DATA	O	TUNER PLL data

SECTION 6
ERROR CODE

This set displays an error code, and a mode code in case of error on the display tube, if the operation stopped by error.
The following provides description concerned.



A: Error code ..... Table 6-1
B: Mode code in case of error ..... Table 6-2

These codes are displayed at lower 5-digit positions of display tube.
In this case, " : " between digits is not displayed.

Table 6-1. Error Codes

Code	Description
0	NO ERROR
1	CAM ENCODER ERROR, LOAD DIRECTION
2	CAM ENCODER ERROR, UNLOAD DIRECTION
3	T REEL ERROR
4	S REEL ERROR
5	CAPSTAN ERROR
6	DRUM ERROR
7	INITIALIZE ERROR
8	CASSETTE UNLOADING ERROR
9	RESERVED

Table 6-2. Mode Codes in Case of Error

Code	Description
0	EJECT (POWER ON)
1	EJECT (POWER OFF)
2	UNLOAD STOP
3	STOP (POWER ON)
4	POWER OFF (CASSETTE IN)
5	F. FWD
6	REW
7	LOW SPEED F. FWD
8	LOW SPEED REW
9	STANDBY
10	REC
11	REC (VISS)
12	REC PAUSE
13	PLAY
14	A. DUB
15	A. DUB PAUSE
16	CUE
17	REV
18	STILL (MECHA FWD)
19	FWD FRAM BY FRAM (FWD SLOW)
20	STILL (MECHA RVS)
21	RVS FRAM BY FRAM (RVS SLOW)

SECTION 7
ADJUSTMENTS

During the adjustment, see the Parts Arrangement Diagram for Adjustments on Page 7-6.

7-1. MECHANICAL ADJUSTMENTS

Refer to the SERVICE MANUAL of VHS MECHANICAL ADJUSTMENT VI.

7-2. ELECTRICAL ADJUSTMENTS

2-1. PRE-ADJUSTMENT PREPARATIONS

Necessary items and indications for total adjustment of electric circuit of this machine will be described in this chapter.

2-1-1. Instruments to be Used

1) Color TV
2) Oscilloscope 1 or 2 phenomena, band more than 30 MHz, delay mode, as provided.
3) NTSC pattern generator
4) PAL-N pattern generator
5) Digital voltmeter
6) Audio level meter
7) Audio noise meter
8) Audio generator
9) Attenuator
10) Alignment tape
    Part Code: 8-192-605-36 KRV-51P (PAL)
    Part Code: 8-192-605-32 KRV-51N2 (NTSC)

2-1-2. Connection

Unless otherwise specified, connect and adjust the measuring instruments as shown in the following diagram.

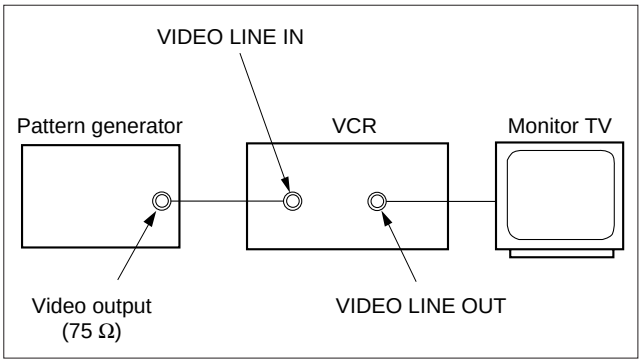


Fig. 7-2-1

2-1-3. Set-up of Adjustment

In this adjustment, PAL-N or NTSC pattern generator is connected with LINE input signal terminal. When check to tuner, connected AERIAL terminal. Check that the amplitudes of video signal SYNC signal, of picture portions, and of burst signals are flat at approximately 0.3, 0.7 and 0.3 V, respectively, and that the level ratio of the burst signal and "red" signal are 0.30: 0.66. Fig. 7-2-2. shows video signals (color bars) used in adjusting the video section.

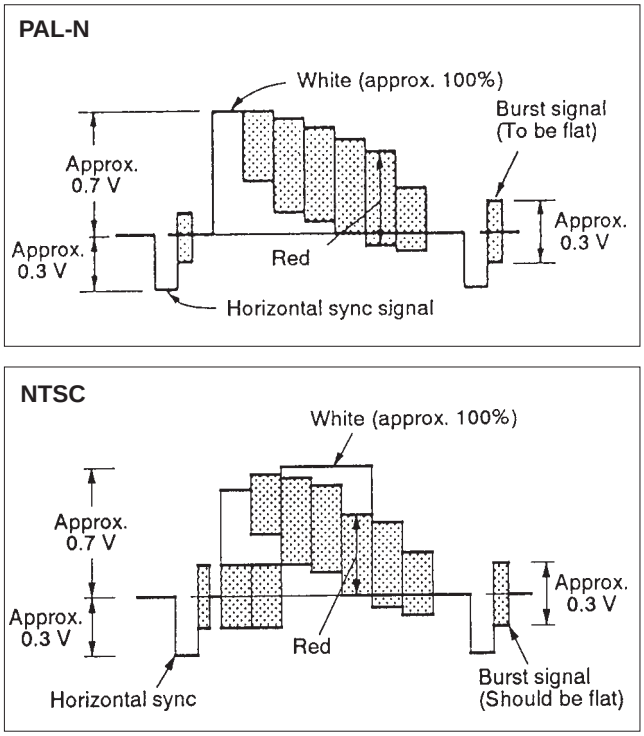


Fig. 7-2-2

2-1-4. Alignment Tapes [Alignment Tape (KRV-51N2 / KRV-51P)]

	Mode	Time	Video signal	Audio signal (HiFi/Normal)
1	SP	Seven minutes	Color bar	400 Hz
2	SP	Three minutes	Monoscope	
3	EP	Seven minutes	Color bar	
4	EP	Three minutes	Monoscope	

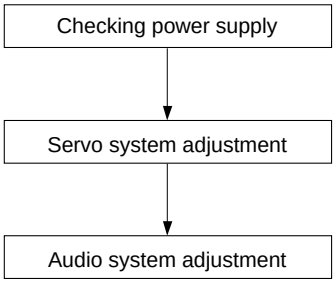
2-1-5. Specified I/O Level and Impedance

Input/output terminal

Video inputs	LINE IN : phono jack 1 Vp-p, 75 Ω, unbalanced, sync negative
Audio inputs	LINE IN : phono jacks 47 kW, –7.5 dBs (0 dBs = 0.775 Vrms) More than 10 kW, –4 dBs
Video outputs	LINE OUT: phono jack 1 Vp-p, 75 Ω, unbalanced, sync negative
Audio outputs	LINE OUT: phono jacks –7.5 dBs at load impedance 47 kΩ Output impedance : less than 10 Ω

2-1-6. Adjusting Sequence

Make the electrical adjustment in the following sequence.



2-2. POWER SUPPLY ADJUSTMENT

2-2-1. Power Supply Check (HS-921SF1 BOARD, SR-708 BOARD)

Mode	E-E
Measuring Instrument	Digital voltmeter
–10 V check	
Measurement Point	Pin ⑨ of CN600
Specified Value	–10.3 ±0.8 V
+6 V check	
Measurement Point	Pin ⑦, ⑧ of CN600
Specified Value	5.9 ± 0.2 V
+13 V check	
Measurement Point	Pin ②, ③ of CN600
Specified Value	13.3 ± 0.5 V
+35 V check	
Measurement Point	Pin ① of CN600
Specified Value	38.0 ± 3.0 V

Checking Method:

1) Confirm that each voltage meets its specified value.

2-2-2. +6 V Adjustment (HS-921SF1 BOARD, SR-708 BOARD)

Mode	REC or PB
Measuring Instrument	Digital voltmeter
Measurement Point	Pin ⑦, ⑧ of CN201
Adjusting Element	RV201 (HS-921SF1 BOARD) VR201 (SR-708 BOARD)
Specified Value	5.9 ± 0.2 V

2-3. SERVO SYSTEM ADJUSTMENT

2-3-1. RF Switching Position Adjustment (MA-323 Board)

Purpose:

Adjust the interval between A ch and B ch of tape playback output.

Improve the interchangeability with other tapes and sets.

When it is out of order, the interval appears on the screen, the screen is disturbed.

Mode	PB
Signal	Alignment tape SP mode color bar
Measurement Point	CH1: VIDEO LINE OUT CH2: Pin ② of CN501 (RF SWP)
Measuring Instrument	Oscilloscope
Specified Value	6.5 ± 0.5 H (416 ± 32 µsec) PAL 6.5 ± 0.5 H (410 ± 32 µsec) NTSC

Adjusting Method:

1) Connect MA-323 board JS140 to the GND for about 1 secont to activate the RF switching position adjustment mode.
2) Check appear “A P” on FL display.
3) Using the channel + and – buttons, adjust to 6.5 ± 0.5 H.
4) Press the pause button.

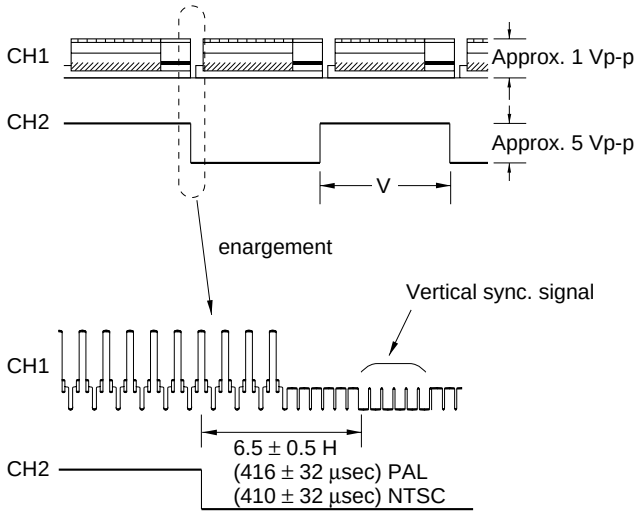


Fig. 7-2-3.

2-4. AUDIO SYSTEM ADJUSTMENTS

• Adjust both Lch and Rch.

[Connection]

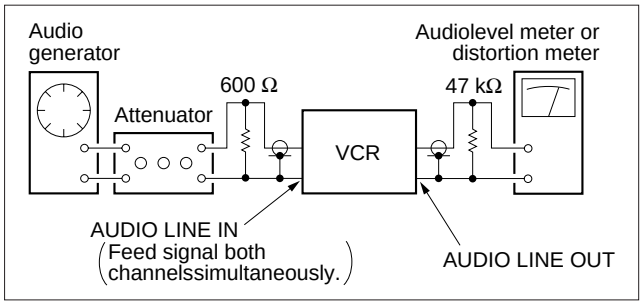


Fig. 7-2-4.

2-4-1. Hi-Fi Audio System Adjustment (SLV-L76HF/L86HF)

• Set switches and knobs to the following positions to make adjustment unless otherwise specified.
INPUT SELECT switch ..... LINE
AUDIO MONITOR ..... STEREO

[Adjustment Sequence]

1. **AF Switching Position Adjustment**
2. **Frequency Responce Check**
3. **Overall Level Characteristic and Distortion Factor Check**
4. **Overall S/N Check**

1. AF Switching Position Adjustment (MA-323 Board)

Purpose:

Adjust the interval between A CH and B CH of tape playback output. Improve the interchangeability with other tapes and sets. When it is out of order, noisy sound is increased and big noise is heard.

Mode	PB
Signal	Alignment tape SP mode color bar
Measurement point	CH1: Pin ② of CN501 CH2: Pin ① of CN341
Measuring Instrument	Oscilloscope
Specified Value	Fig. 7-2-5

Adjusting Method:

1) Connect MA-323 board JS140 to the GND for about 1 secont to activate the RF switching position adjustment mode.
2) Press the record button to activate the AF switching position adjustment mode.
3) Check appear “A H” on FL display.
4) Using the channels + and – buttons, minimize a chipped portion. At this time, confirm that a noisy sound is not heard.
5) Press the pause button.

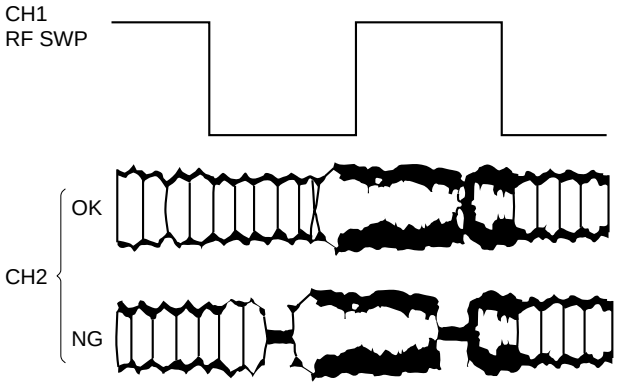


Fig. 7-2-5.

2. Frequency Responce Check

Purpose:

Confirm that the frequency characteristic is within the specification.

Mode	REC and PB (SP, LP mode)
Signal	400 Hz, –7.5 dBs 20 Hz, –7.5 dBs 20 kHz, –7.5 dBs
Measurement point	Audio output terminal
Measurement equipment	Audio level meter
Specified value	0 ± 2 dB

NOTE: Tape path adjustment must have been completed.

Confirmation Method:

1) Supply a signal of 400 Hz, –7.5 dBs to both L and R channels of Audio Line Input.
2) Connect the audio level meter to the Audio Line Output.
3) Adjust the attenuator so that the audio level meter will indicate –7.5 dBs.
4) Make recording.
5) Set an audio line input signal to 20 Hz and make recording.
6) Set an audio line input signal to 20 kHz and make recording.
7) Playback a recorded portion, and measure output levels at 400 Hz and 20 Hz and 20 kHz.
8) Confirm that the 20 Hz and 20 kHz playback output level within a range of the 400 Hz playback output level 0 ± 2 dB.

3. Overall Level Characteristic and Distortion Factor Check

Purpose:

Check the record level, play level, and distortion factor against the reference input.

Mode	REC and PB (SP mode)
Signal	400 Hz, –7.5 dBs
Measurement point	Audio output terminal
Measurement equipment	Audio level meter and distortion factor meter
Specified value	Playback level: –7.5 ± 2 dBs Distortion factor: 1% or less

Confirmation Method:

1) Supply an audio signal of 400 Hz, –7.5 dBs simultaneously to both L and R channels of Audio Line Input.
2) Make recording
3) Play back a recorded portion.
4) Confirm that a playback level is –7.5 ±2 dBs.
5) Confirm that a distortion factor is within 1%.

4. Overall S/N Check

Purpose:

Confirm that the S/N is within the specification.

Mode	REC and PB (SP mode)
Signal	Short
Measurement point	Audio output terminal
Measurement equipment	Audio noise meter
Specified value	–67.5 dBs or less

Confirmation Method:

1) Connect both L and R channels of audio line input to the GND.
2) Start recording.
3) Play the recorded part to confirm that the noise is below –67.5 dBs.

2-4-2. Normal Audio System Adjustment

- Make adjustment in the SP mode, unless otherwise specified. Use a normal VHS cassette for an adjustment tape.
- Set AUDIO MONITOR to normal.

[Adjustment Sequence]

1. **ACE Head Adjustment**
2. **E-E Output Level Check**
3. **Frequency Responce Check**
4. **Overall Level Characteristic and Distortion Factor Check**
5. **Overall S/N Check**

1. ACE Head Adjustment

Refer to the service manual of VHS MECHANICAL ADJUSTMENT VI.

2. E-E Output Level Check

Purpose:

Confirm that the output level against the reference input is within the specification.

Mode	E-E
Signal	L, R: 400 Hz, –7.5 dBs
Measurement point	Audio output terminal
Measurement equipment	Audio level meter
Specified value	–7.5 ± 2 dBs

Confirmation Method:

1) Simultaneously input a signal of 400 Hz, –7.5 dBs to both L and R channels of Audio Line Input.
2) Confirm that the audio output level is –7.5 ± 2 dBs.

3. Frequency Responce Check

Purpose:

Confirm that the frequency characteristic is within the specification.

Mode	REC and PB (SP mode)
Signal	400 Hz, –30.0 dBs 7 kHz, –30.0 dBs
Measurement point	Audio output terminal
Measurement equipment	Audio level meter
Specified value	1 ± 3 dB

Tape path adjustment must have been completed.

Confirmation Method:

1) Supply a signal of 400 Hz, –30.0 dBs to both L and R channels of Audio Line Input.
2) Connect the audio level meter to the Audio Line Output.
3) Adjust the attenuator so that the audio level meter will indicate –30.0 dBs.
4) Make recording in the SP mode.
5) Set an audio line input signal to 7 kHz and make recording.
6) Playback a recorded portion, and measure output levels at 400 Hz and 7 kHz.
7) Confirm that the 7 kHz playback output level within a range of the 400 Hz playback output level 1 ± 3 dB.

4. Overall Level Characteristic and Distortion Factor Check

Purpose:
Check the record level, play level, and distortion factor against the reference input.

Mode	REC and PB (SP mode)
Signal	400 Hz, –7.5 dBs
Measurement point	Audio output terminal
Measurement equipment	Audio level meter and distortion factor meter
Specified value	Playback level: –7.5 ± 2 dBs Distortion factor: 4% or less

Confirmation Method:
1) Supply an audio signal of 400 Hz, –7.5 dBs simultaneously to both L and R channels of Audio Line Input.
2) Make recording
3) Play back a recorded portion.
4) Confirm that a playback level is –7.5 ± 2 dBs.
5) Confirm that a distortion factor is within 4%.

5. Overall S/N Check

Purpose:
Confirm that the S/N is within the specification.

Mode	REC and PB (SP mode)
Signal	Short
Measurement point	Audio output terminal
Measurement equipment	Audio noise meter
Specified value	–46.0 dBs or less

Confirmation Method:
1) Connect both L and R channels of audio line input to the GND.
2) Start recording.
3) Play the recorded part to confirm that the noise is below –46.0 dBs.

2-5. TUNER SYSTEM ADJUSTMENT

[Connection]

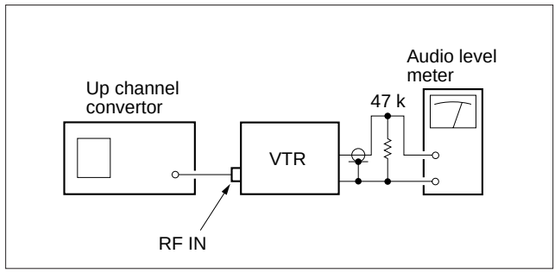


Fig. 7-2-6

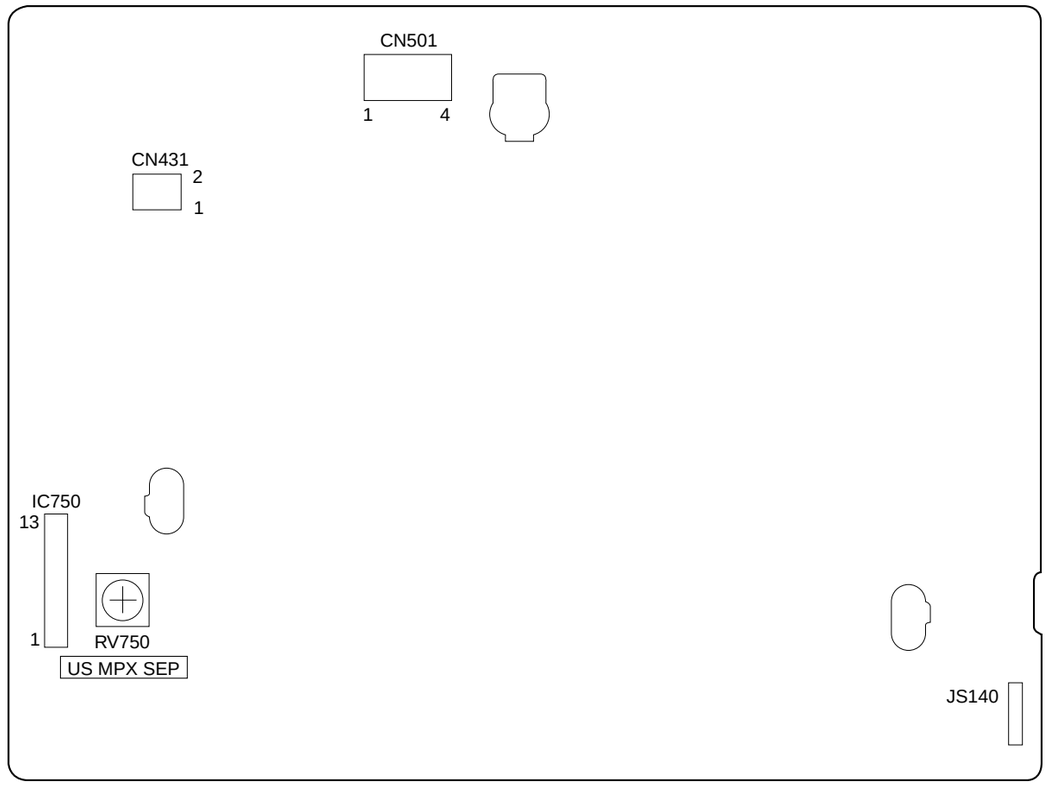
2-5-1. Separation Adjustment (SLV-L76HF/L86HF)

Purpose:
Mixed audio signal separate Lch and Rch.

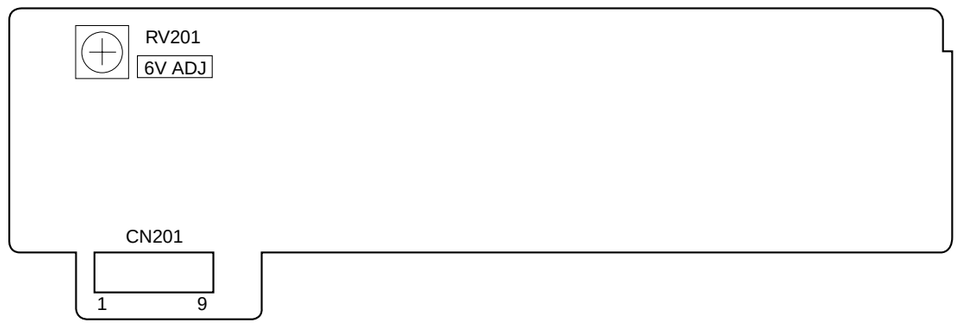
Mode	E-E
Signal	VIDEO: color bar (87.5% modulation) AUDIO: L 1 kHz 100% modulation R no signal ELECTRIC FIELD: 60–80 dBs/75 W Tem
Measurement point	Pin ⑫ of IC750
Measurement equipment	Audio level meter
Adjusting Element	RV750
Specified value	–9.9 ± 0.2 dBm (700 ± 14 mVp-p)

2-6. PARTS ARRANGEMENT DIAGRAM FOR ADJUSTMENTS

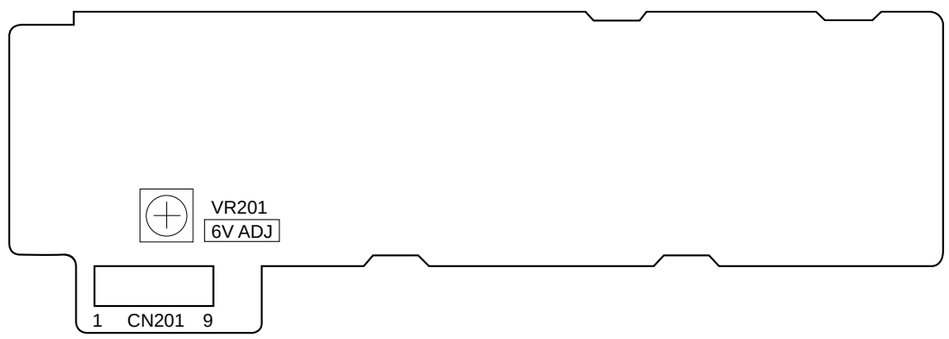
MA-323 BOARD (Side A)



HS-921SF1 BOARD (Side A)



SR-708 BOARD (Side A)



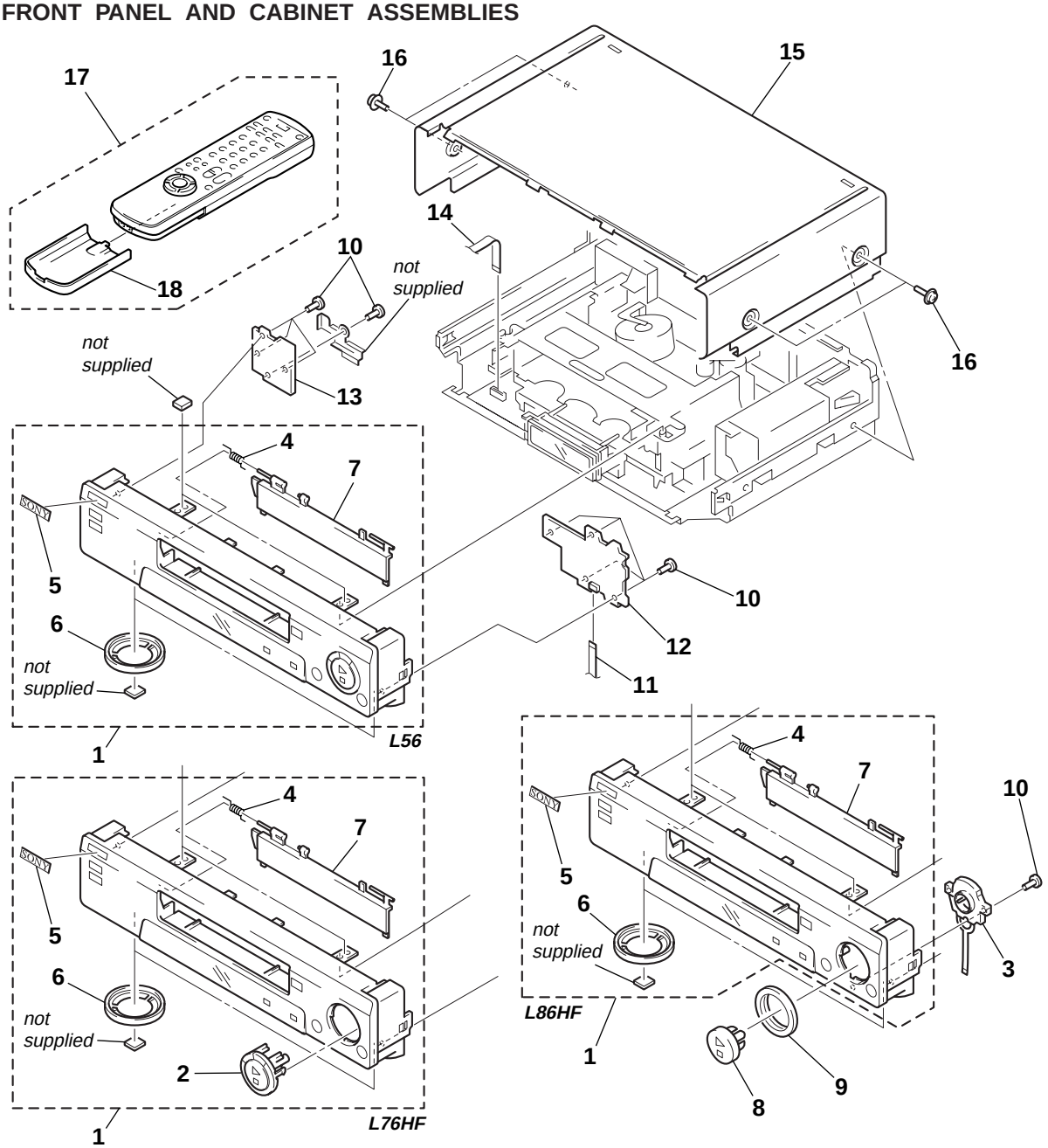
SECTION 8
REPAIR PARTS LIST

8-1. EXPLODED VIEWS

NOTE:
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list and accessories and packing materials are given in the last of the electrical parts list.

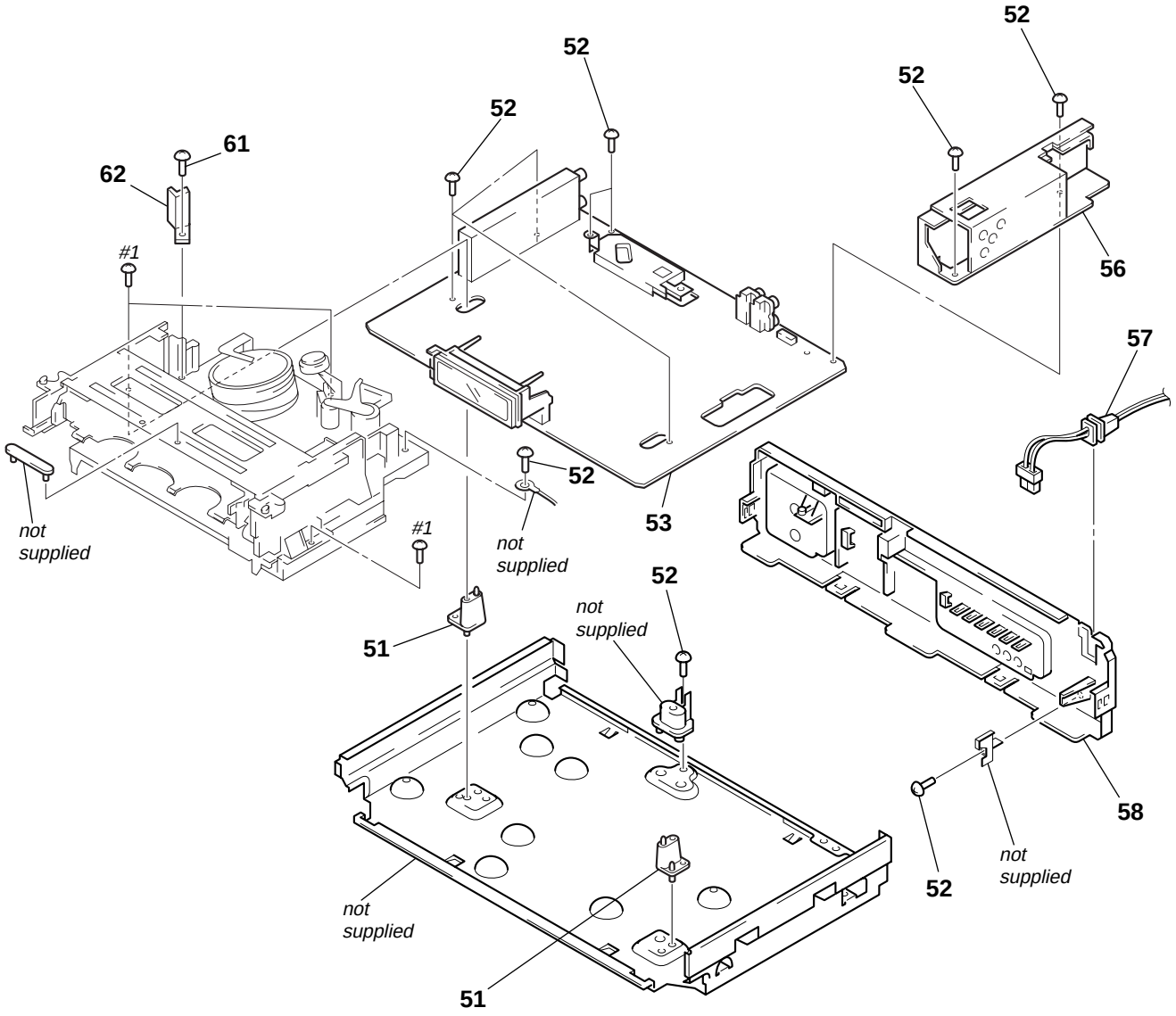
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

8-1-1. FRONT PANEL AND CABINET ASSEMBLIES



Ref. No.	Part No.	Description	Remark
1	X-3949-736-1	PANEL ASSY, FRONT (L86HF)	
1	X-3949-737-1	PANEL ASSY, FRONT (L56)	
1	X-3949-738-1	PANEL ASSY, FRONT (L76HF)	
2	X-3949-102-1	BUTTON ASSY, FUNCTION (L76HF)	
3	1-762-844-21	SWITCH, ROTARY	
4	3-953-432-01	SPRING (GE), FL	
5	3-943-995-31	EMBLEM (NO.5), SONY	
* 6	3-977-160-01	INSULATOR	
7	3-056-468-11	DOOR (S), CASSETTE	
8	3-979-309-61	BUTTON (AV), CENTER (L86HF)	
9	3-988-327-21	RING (M), JOG (L86HF)	
10	4-921-277-41	SCREW (B2.6X8), TAPPING, BIND	
11	1-783-569-11	CABLE, FLAT (FDM-4)	
* 12	A-6791-586-A	DM-76 BOARD, COMPLETE (L86HF)	
* 12	A-6791-588-A	DM-76 BOARD, COMPLETE (L56, L76HF)	
* 13	A-6791-575-A	MF-312 BOARD, COMPLETE (L56, L76HF)	
* 13	A-6791-589-A	MF-312 BOARD, COMPLETE (L86HF)	
14	1-783-568-11	CABLE, FLAT (FMF-23)	
15	3-052-716-11	CASE, UPPER	
16	3-710-901-61	SCREW, TAPPING	
17	1-418-550-11	COMMANDER, STANDARD (RMT-V247E) (L56)	
17	1-418-550-21	COMMANDER, STANDARD (RMT-V247F) (L76HF, L86HF)	
18	3-709-133-11	COVER, BATTERY (for RMT-V247E/V247F)	

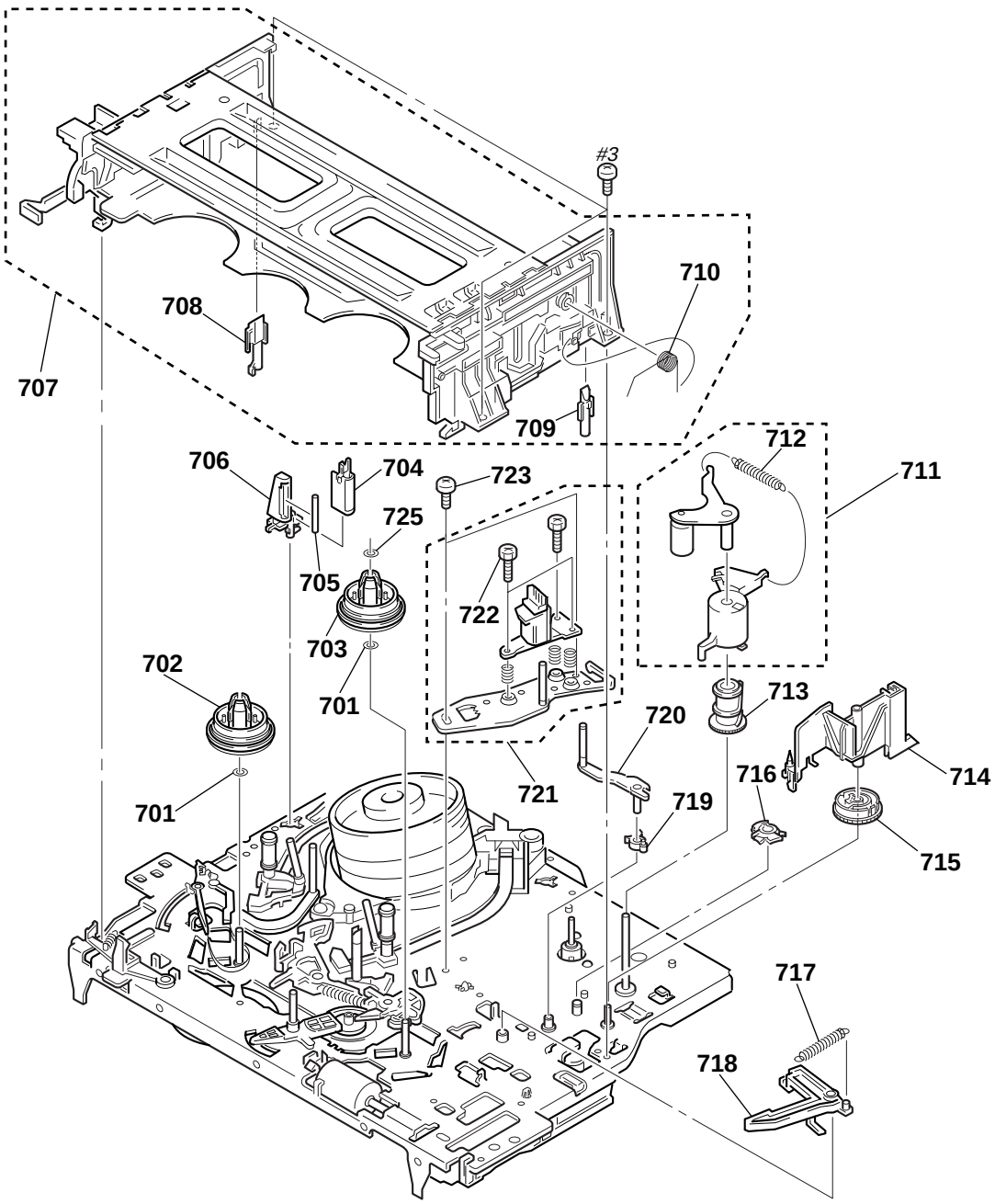
8-1-2. CHASSIS ASSEMBLY



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
* 51	3-959-383-01	BASE (R), MD	
52	3-970-608-21	SUMITITE (B3), +BV	
* 53	A-6791-951-A	MA-323 BOARD, COMPLETE (L86HF)	
* 53	A-6791-952-A	MA-323 BOARD, COMPLETE (L76HF)	
* 53	A-6791-953-A	MA-323 BOARD, COMPLETE (L56)	
* 56	1-468-311-21	POWER BLOCK (SR-708) (L76HF, L86HF)	
* 56	1-468-312-21	POWER BLOCK (HS-921SF1) (L56)	
⚠57	1-791-157-11	CORD, POWER	
58	3-977-139-71	PANEL, REAR	
61	3-979-112-01	SCREW SW (+) BVTP 3X10	
62	X-3947-568-1	TC (N17S) ASSY	

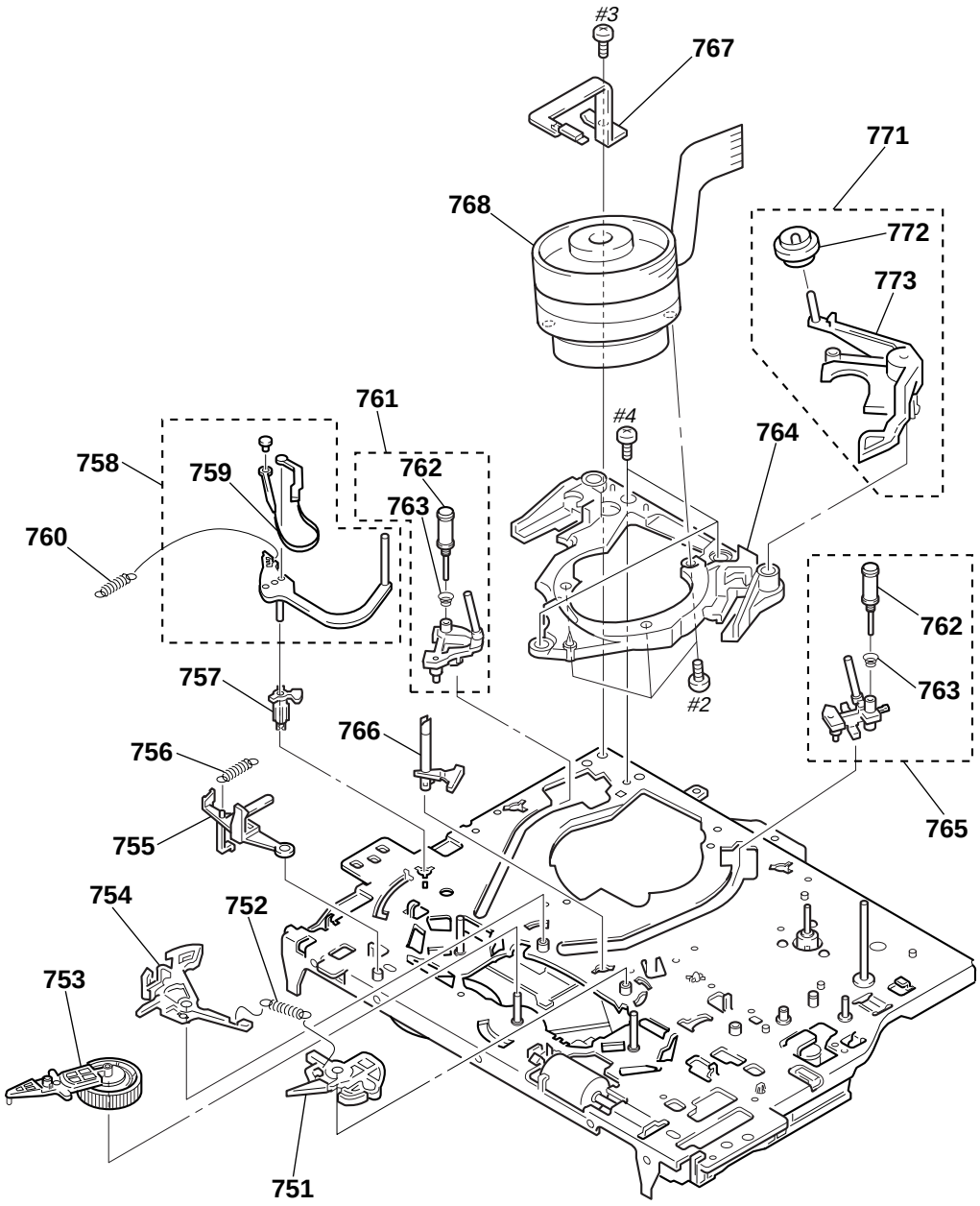
8-1-3. MECHANISM CHASSIS ASSEMBLY (1)



Ref. No.	Part No.	Description	Remark
701	3-977-509-01	WASHER, THRUST	
702	3-977-507-01	TABLE, REEL (S)	
703	3-977-508-01	TABLE, REEL (T)	
704	1-500-144-11	HEAD, FE	
705	3-977-495-01	SHAFT TG2	
706	3-977-494-01	HOLDER, FEH	
707	A-6759-619-B	FL ASSY BOARD, COMPLETE	
708	3-977-535-01	PLATE, LUMINOUS (END SENSOR)	
709	3-977-536-01	PLATE, LUMINOUS (TOP SENSOR)	
710	3-970-471-01	SPRING (DECK OPEN), TORSION	
711	A-6759-615-A	PRESS BLOCK ASSY, PINCH	
712	3-958-455-01	SPRING (PINCH), TENSION	

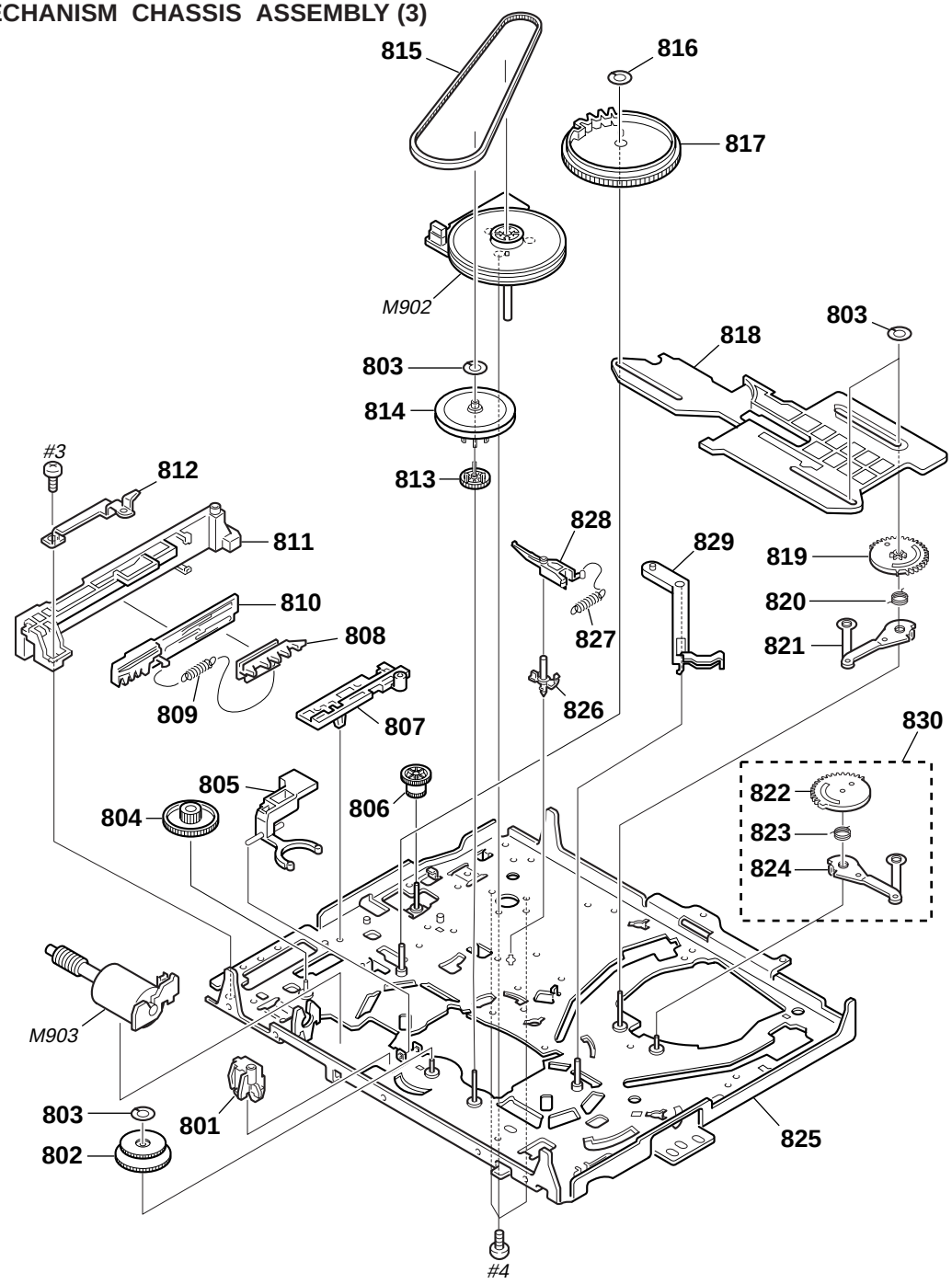
Ref. No.	Part No.	Description	Remark
713	3-977-447-01	GEAR, ELEVATOR	
714	3-977-514-01	OPENER, LID	
715	3-977-441-01	GEAR, PINCH PRESSING	
716	3-977-445-01	GEAR, TG8 ARM DRIVING	
717	3-977-465-01	SPRING, EXTENSION (RVS BRAKE)	
718	X-3947-582-1	ARM ASSY, RVS BRAKE	
719	3-977-446-01	GEAR, TG8 ARM	
720	X-3947-590-1	TG8 ASSY	
721	A-6759-620-A	HEAD BLOCK ASSY, ACE (TDK)	
722	3-974-556-01	+ HEXA TT 2.6X9 (TAPER)	
723	3-979-508-01	SCREW +HEXA TP SW 3X8	
725	3-977-443-01	WASHER, STOPPER	

8-1-4. MECHANISM CHASSIS ASSEMBLY (2)



Ref. No.	Part No.	Description	Remark
751	X-3947-581-1	BRAKE ASSY, MAIN (T)	
752	3-977-462-01	SPRING, EXTENTION. (MAIN BRAKE)	
753	X-3947-573-1	ARM ASSY, PENDULUM	
754	X-3947-580-2	BRAKE ASSY, MAIN (S)	
755	3-977-513-02	LEVER, REC. PROOF	
756	3-976-767-01	SPRING, TENS. (REC. PROOF)	
757	3-977-487-01	BOSS, TG1 FULCRUM	
758	X-3947-587-1	TG1 ASSY	
759	X-3947-589-1	BAND ASSY, TG1	
760	3-977-488-01	SPRING (POWER TENSION)	
761	A-6750-324-A	SHUTTLE (S) BLOCK ASSY	
762	X-3944-378-1	ROLLER ASSY, GUIDE	
763	3-965-178-01	SPRING	
764	3-969-632-04	BASE, DRUM	
765	A-6750-328-E	SHUTTLE (T) BLOCK ASSY	
766	3-977-501-01	PLATE, LUMINOUS	
767	X-3943-899-8	GROUND ASSY, SHAFT	
768	8-839-037-04	DRUM ASSY, DZH-74E/Z-RP (L56)	
768	8-839-045-02	DRUM ASSY, DZH-95A/Z-RP (L76HF, L86HF)	
771	A-6746-074-G	ROLLER BLOCK ASSY, HC	
772	X-3947-255-1	ROLLER ASSY, HC	
773	3-975-724-07	ARM, HC	

8-1-5. MECHANISM CHASSIS ASSEMBLY (3)



Ref. No.	Part No.	Description	Remark
801	3-977-437-01	RETAINER, CAM MOTOR	
802	X-3947-584-1	ASSY, REEL DIRECT	
803	3-977-443-01	WASHER, STOPPER	
804	3-977-438-01	WORM - WHEEL	
805	3-977-506-01	ARM, LIMITTER SELECTION	
806	3-977-444-01	GEAR, PINCH TRANSMISSION	
807	3-977-515-01	GUIDE, FL SLIDER	
808	3-977-517-01	PLATE, SLIDE, FL	
809	3-977-519-01	SPRING, TENS. (LIMIT, FL)	
810	3-977-518-02	PLATE, LIMITTER, FL	
811	3-977-516-01	HOLDER, FL SLIDER	
812	3-977-877-01	PLATE, RETAINER	
813	3-977-504-01	GEAR, CLUTCH	
814	X-3947-585-1	GEAR ASSY, PULLEY	
815	3-977-510-01	BELT, RUBBER	
816	3-977-440-01	WASHER, STOPPER	

Ref. No.	Part No.	Description	Remark
817	3-977-439-01	GEAR, CAM	
818	3-977-442-01	SLIDER	
819	3-977-455-01	GEAR, LOADING (T)	
820	3-977-456-03	SPRING, TORSION (LOAD T)	
821	X-3947-579-1	LEVER ASSY, LOADING (T)	
822	3-977-451-01	GEAR, LOADING (S)	
823	3-977-452-01	SPRING, TORSION (LOAD S)	
824	X-3947-578-1	LEVER ASSY, LOADING (S)	
825	X-3947-576-2	CHASSIS ASSY, MECHANICAL	
826	3-977-468-01	SHAFT, CAPSTAN BRAKE	
827	3-977-467-02	SPRING, CAP BRAKE	
828	X-3947-583-1	BRAKE ASSY, CAPSTAN	
829	3-977-489-01	ARM, TG1 DRIVING	
830	A-6759-616-A	GEAR BLOCK ASSY, LOADING (S)	
M902	1-698-971-11	MOTOR, DC (CAPSTAN)	
M903	X-3947-577-1	MOTOR ASSY, CAM	

8-2. ELECTRICAL PARTS LIST

NOTE:
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL: Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F: nonflammable
- Not all of the parts for POWER BLOCK (HS-921SF1 and SR-708) are listed.
- Items marked "*" are not stocked since they are seldom required for routine service.
  Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u: µ, for example:
  uA. . : µA. . uPA. . : µPA. .
  uPB. . : µPB. . uPC. . : µPC. .
  uPD. . : µPD. .
- CAPACITORS
  uF: µF
- COILS
  uH: µH

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description			Remark
*	A-6791-586-A	DM-76 BOARD, COMPLETE (L86HF)			
*	A-6791-588-A	DM-76 BOARD, COMPLETE (L56/L76HF)			
		**********			
		(Ref.No. 2,000 Series)			
		< CONNECTOR >			
CN451	1-774-471-41	CONNECTOR, FFC/FPC 5P (L86HF)			
CN452	1-691-066-21	HOUSING, CONNECTOR 7P			
		< RESISTOR >			
R442	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R443	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R444	1-216-295-00	METAL CHIP	0	5%	1/10W
R445	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R446	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R447	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
		< SWITCH >			
S441	1-762-196-21	SWITCH, TACT (EJECT ⏏)			
S442	1-762-196-21	SWITCH, TACT (REW ◀◀) (L86HF)			
S443	1-762-196-21	SWITCH, TACT (FF ▶▶) (L86HF)			
S444	1-762-196-21	SWITCH, TACT (PAUSE ❚❚)			
S445	1-762-196-21	SWITCH, TACT (REC ●)			
S447	1-762-196-21	SWITCH, TACT (REW ◀◀) (L56/L76HF)			
S448	1-762-196-21	SWITCH, TACT (FF ▶▶) (L56/L76HF)			
S449	1-762-196-21	SWITCH, TACT (STOP ■) (L56/L76HF)			
S450	1-762-196-21	SWITCH, TACT (PLAY ▷) (L56/L76HF)			
*	A-6791-951-A	MA-323 BOARD, COMPLETE (L86HF)			
*	A-6791-952-A	MA-323 BOARD, COMPLETE (L76HF)			
*	A-6791-953-A	MA-323 BOARD, COMPLETE (L56)			
		**********			
		(Ref.No. 1,000 Series)			
*	3-960-273-01	SPACER, TOP END			
*	3-960-274-01	SPACER, LED			
*	3-966-865-01	BASE, INDICATION TUBE			
		< CAPACITOR >			
C100	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C101	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C102	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C103	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C104	1-128-057-11	ELECT	330uF	20%	6.3V
C106	1-124-589-11	ELECT	47uF	20%	16V
C108	1-163-259-91	CERAMIC CHIP	220PF	5%	50V
C109	1-124-589-11	ELECT	47uF	20%	16V
C112	1-104-905-11	CAPACITOR	0.22F		5.5V
C113	1-163-253-11	CERAMIC CHIP	120PF	5%	50V
C114	1-124-248-00	ELECT	22uF	20%	35V
C115	1-126-157-11	ELECT	10uF	20%	16V
C116	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C117	1-163-243-11	CERAMIC CHIP	47PF	5%	50V
C119	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
					(L76HF/L86HF)
C120	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C121	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C122	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C123	1-126-925-11	ELECT	470uF	20%	10V
C124	1-117-720-11	CERAMIC CHIP	4.7uF		10V
C125	1-124-589-11	ELECT	47uF	20%	16V
C126	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C128	1-117-720-11	CERAMIC CHIP	4.7uF		10V
C129	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C131	1-128-499-11	ELECT	220uF	20%	16V
C133	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C134	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C136	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C137	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C138	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C139	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C142	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C171	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C172	1-163-229-11	CERAMIC CHIP	12PF	5%	50V
C173	1-163-233-11	CERAMIC CHIP	18PF	5%	50V
C174	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C175	1-163-102-00	CERAMIC CHIP	24PF	5%	50V
C176	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C177	1-164-182-11	CERAMIC CHIP	0.0033uF	10%	50V
C178	1-163-231-11	CERAMIC CHIP	15PF	5%	50V
C180	1-163-231-11	CERAMIC CHIP	15PF	5%	50V
C182	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C185	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C200	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C201	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C203	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V

Ref. No.	Part No.	Description			Remark
C204	1-163-257-11	CERAMIC CHIP	180PF	5%	50V
C205	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C206	1-117-720-11	CERAMIC CHIP	4.7uF		10V
C207	1-117-720-11	CERAMIC CHIP	4.7uF		10V
C208	1-117-720-11	CERAMIC CHIP	4.7uF		10V
C209	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C210	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C212	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C213	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C214	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C215	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C216	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C217	1-163-089-00	CERAMIC CHIP	6PF		50V
C218	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C219	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C220	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C221	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C222	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C223	1-117-720-11	CERAMIC CHIP	4.7uF		10V
C224	1-163-241-11	CERAMIC CHIP	39PF	5%	50V
C225	1-163-121-00	CERAMIC CHIP	150PF	5%	50V
C226	1-163-257-11	CERAMIC CHIP	180PF	5%	50V
C227	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C228	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V
C229	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C231	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C232	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C233	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C234	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C235	1-163-989-11	CERAMIC CHIP	0.033uF	10%	25V
C236	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C237	1-126-157-11	ELECT	10uF	20%	16V
C238	1-117-720-11	CERAMIC CHIP	4.7uF		10V
C239	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C240	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C241	1-126-157-11	ELECT	10uF	20%	16V
C242	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C243	1-126-157-11	ELECT	10uF	20%	16V
C244	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C245	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C246	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C248	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C249	1-117-720-11	CERAMIC CHIP	4.7uF		10V
C250	1-126-157-11	ELECT	10uF	20%	16V
C251	1-126-157-11	ELECT	10uF	20%	16V
C252	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C253	1-163-137-00	CERAMIC CHIP	680PF	5%	50V
C254	1-117-720-11	CERAMIC CHIP	4.7uF		10V
C255	1-163-113-00	CERAMIC CHIP	68PF	5%	50V
C257	1-163-087-00	CERAMIC CHIP	4PF		50V
C258	1-163-222-11	CERAMIC CHIP	5PF	0.25PF	50V
C259	1-164-232-11	CERAMIC CHIP	0.01uF		50V (L86HF)
C261	1-164-232-11	CERAMIC CHIP	0.01uF		50V (L86HF)
C262	1-163-263-11	CERAMIC CHIP	330PF	5%	50V
C263	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C264	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C265	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C266	1-117-720-11	CERAMIC CHIP	4.7uF		10V (L86HF)

Ref. No.	Part No.	Description			Remark
C302	1-126-157-11	ELECT	10uF	20%	16V
C303	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C304	1-163-259-91	CERAMIC CHIP	220PF	5%	50V
C305	1-163-989-11	CERAMIC CHIP	0.033uF	10%	25V
C306	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C307	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C308	1-163-139-00	CERAMIC CHIP	820PF	5%	50V
C309	1-126-157-11	ELECT	10uF	20%	16V
C310	1-126-157-11	ELECT	10uF	20%	16V
C311	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C312	1-137-370-11	FILM	0.01uF	5%	50V
C313	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V
C314	1-124-589-11	ELECT	47uF	20%	16V
C315	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C316	1-126-160-11	ELECT	1uF	20%	50V
C317	1-126-160-11	ELECT	1uF	20%	50V (L56)
C318	1-126-163-11	ELECT	4.7uF	20%	50V
C319	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V
C321	1-124-248-00	ELECT	22uF	20%	35V
C322	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C323	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V
C324	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C325	1-104-913-11	TANTAL. CHIP	10uF	20%	16V
C331	1-104-697-11	FILM	0.047uF	5%	100V (L76HF/L86HF)
C332	1-164-232-11	CERAMIC CHIP	0.01uF		50V (L76HF/L86HF)
C333	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V (L76HF/L86HF)
C335	1-126-933-11	ELECT	100uF	20%	16V (L76HF/L86HF)
C336	1-124-589-11	ELECT	47uF	20%	16V
C337	1-104-696-11	FILM	0.015uF	5%	100V (L56)
C337	1-137-612-11	FILM	0.0068uF	5%	100V (L76HF/L86HF)
C338	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C339	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C340	1-164-232-11	CERAMIC CHIP	0.01uF		50V (L76HF/L86HF)
C342	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V (L76HF/L86HF)
C346	1-117-720-11	CERAMIC CHIP	4.7uF		10V (L76HF/L86HF)
C350	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V (L76HF/L86HF)
C352	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V (L76HF/L86HF)
C353	1-163-038-00	CERAMIC CHIP	0.1uF		25V (L76HF/L86HF)
C357	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V (L76HF/L86HF)
C358	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V (L76HF/L86HF)
C359	1-164-232-11	CERAMIC CHIP	0.01uF		50V (L76HF/L86HF)
C360	1-109-982-11	CERAMIC CHIP	1uF	10%	10V (L76HF/L86HF)
C361	1-109-982-11	CERAMIC CHIP	1uF	10%	10V (L76HF/L86HF)
C362	1-109-982-11	CERAMIC CHIP	1uF	10%	10V (L76HF/L86HF)

Ref. No.	Part No.	Description			Remark
C363	1-216-296-00	METAL CHIP	0	5%	1/8W (L76HF/L86HF)
C364	1-216-296-00	METAL CHIP	0	5%	1/8W (L76HF/L86HF)
C365	1-135-177-21	TANTALUM CHIP	1uF	20%	20V (L76HF/L86HF)
C366	1-135-177-21	TANTALUM CHIP	1uF	20%	20V (L76HF/L86HF)
C369	1-104-913-11	TANTAL. CHIP	10uF	20%	16V (L76HF/L86HF)
C370	1-104-913-11	TANTAL. CHIP	10uF	20%	16V (L76HF/L86HF)
C371	1-135-177-21	TANTALUM CHIP	1uF	20%	20V (L76HF/L86HF)
C372	1-104-913-11	TANTAL. CHIP	10uF	20%	16V (L76HF/L86HF)
C373	1-104-913-11	TANTAL. CHIP	10uF	20%	16V (L76HF/L86HF)
C374	1-135-177-21	TANTALUM CHIP	1uF	20%	20V (L76HF/L86HF)
C375	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V (L76HF/L86HF)
C376	1-163-016-00	CERAMIC CHIP	0.0039uF	10%	50V (L76HF/L86HF)
C377	1-124-589-11	ELECT	47uF	20%	16V (L76HF/L86HF)
C378	1-104-913-11	TANTAL. CHIP	10uF	20%	16V (L76HF/L86HF)
C379	1-135-179-21	TANTAL. CHIP	2.2uF	20%	16V (L76HF/L86HF)
C380	1-104-913-11	TANTAL. CHIP	10uF	20%	16V (L76HF/L86HF)
C381	1-124-589-11	ELECT	47uF	20%	16V (L76HF/L86HF)
C382	1-163-016-00	CERAMIC CHIP	0.0039uF	10%	50V (L76HF/L86HF)
C383	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V (L76HF/L86HF)
C384	1-164-505-11	CERAMIC CHIP	2.2uF		16V (L76HF/L86HF)
C386	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V (L76HF/L86HF)
C391	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V (L76HF/L86HF)
C401	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C402	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C403	1-126-163-11	ELECT	4.7uF	20%	50V
C404	1-126-157-11	ELECT	10uF	20%	16V
C405	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C406	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C407	1-126-163-11	ELECT	4.7uF	20%	50V
C408	1-163-241-11	CERAMIC CHIP	39PF	5%	50V
C409	1-163-241-11	CERAMIC CHIP	39PF	5%	50V
C411	1-163-229-11	CERAMIC CHIP	12PF	5%	50V
C412	1-163-224-11	CERAMIC CHIP	7PF	0.25PF	50V
C417	1-124-589-11	ELECT	47uF	20%	16V
C419	1-163-245-11	CERAMIC CHIP	56PF	5%	50V
C421	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C422	1-124-589-11	ELECT	47uF	20%	16V
C423	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C424	1-124-589-11	ELECT	47uF	20%	16V
C501	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C504	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C505	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C506	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C507	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C508	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C509	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C510	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C511	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C512	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C513	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C514	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C515	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C516	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C517	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C518	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C519	1-124-584-00	ELECT	100uF	20%	10V
C520	1-117-720-11	CERAMIC CHIP	4.7uF		10V
C521	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C522	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C523	1-124-584-00	ELECT	100uF	20%	10V
C524	1-117-720-11	CERAMIC CHIP	4.7uF		10V
C526	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V
C527	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V
C529	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C600	1-126-163-11	ELECT	4.7uF	20%	50V
C601	1-124-248-00	ELECT	22uF	20%	35V
C602	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C603	1-124-589-11	ELECT	47uF	20%	16V
C604	1-124-589-11	ELECT	47uF	20%	16V
C606	1-124-589-11	ELECT	47uF	20%	16V
C608	1-124-584-00	ELECT	100uF	20%	10V
C609	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C612	1-104-664-11	ELECT	47uF	20%	16V
C613	1-104-664-11	ELECT	47uF	20%	16V
C614	1-124-589-11	ELECT	47uF	20%	16V
C701	1-126-933-11	ELECT	100uF	20%	16V
C702	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C703	1-104-664-11	ELECT	47uF	20%	16V
C704	1-126-933-11	ELECT	100uF	20%	16V
C705	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C706	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C708	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V (L76HF/L86HF)
C710	1-126-963-11	ELECT	4.7uF	20%	50V
C712	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C713	1-126-933-11	ELECT	100uF	20%	16V
C714	1-126-933-11	ELECT	100uF	20%	16V
C715	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C716	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C717	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C718	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C719	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C721	1-126-767-11	ELECT	1000uF	20%	16V
C752	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C753	1-104-664-11	ELECT	47uF	20%	16V (L76HF/L86HF)
C756	1-126-964-11	ELECT	10uF	20%	50V (L76HF/L86HF)
C757	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V (L56)
C758	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V (L56)

Ref. No.	Part No.	Description			Remark
C902	1-126-935-11	ELECT	470uF	20%	6.3V
C904	1-104-664-11	ELECT	47uF	20%	16V
C906	1-126-160-11	ELECT	1uF	20%	50V
C907	1-126-160-11	ELECT	1uF	20%	50V (L76HF/L86HF)
C908	1-126-160-11	ELECT	1uF	20%	50V
C909	1-126-160-11	ELECT	1uF	20%	50V (L76HF/L86HF)
C911	1-124-589-11	ELECT	47uF	20%	16V
		< CONNECTOR >			
* CN101	1-568-954-11	PIN, CONNECTOR 5P			
CN102	1-779-723-11	CONNECTOR, BOARD TO BOARD 9P			
* CN103	1-766-716-11	CONNECTOR, BOARD TO BOARD 3P			
CN105	1-784-484-11	CONNECTOR, FFC/FPC 5P			
CN161	1-506-468-11	PIN, CONNECTOR 3P			
CN301	1-506-469-11	PIN, CONNECTOR 4P			
CN302	1-506-468-11	PIN, CONNECTOR 3P			
* CN341	1-560-890-00	PIN, CONNECTOR 2P (L76HF/L86HF)			
CN423	1-766-278-11	PIN, CONNECTOR (PC BOARD) 5P (L86HF)			
CN424	1-784-486-11	CONNECTOR, FFC/FPC 7P			
* CN501	1-560-892-00	PIN, CONNECTOR 4P			
CN502	1-563-585-11	CONNECTOR, FLEXIBLE 8P (L56)			
CN502	1-784-492-11	CONNECTOR, FFC/FPC 13P (L76HF/L86HF)			
* CN600	1-568-936-11	PIN, CONNECTOR 9P			
		< JACK >			
CNJ901	1-779-010-11	JACK, PIN 4P (LINE IN/LINE OUT) (L56)			
CNJ901	1-779-011-11	JACK, PIN 6P (LINE-1 IN/LINE OUT) (L76HF/L86HF)			
		< DIODE >			
D102	8-719-048-26	DIODE GL528V1 (T/S SENS)			
D103	8-719-200-82	DIODE 11ES2			
D104	8-719-200-82	DIODE 11ES2			
D106	8-719-911-19	DIODE 1SS119			
D130	8-719-200-82	DIODE 11ES2			
D163	8-719-200-82	DIODE 11ES2			
D164	8-719-200-82	DIODE 11ES2			
D165	8-719-200-82	DIODE 11ES2			
D201	8-719-911-19	DIODE 1SS119			
D305	8-719-109-93	DIODE RD6.2ES-B2			
D306	8-719-109-93	DIODE RD6.2ES-B2			
D307	8-719-109-93	DIODE RD6.2ES-B2			
D401	8-719-109-93	DIODE RD6.2ES-B2			
D402	8-719-911-19	DIODE 1SS119			
D403	8-719-911-19	DIODE 1SS119			
D600	8-719-911-19	DIODE 1SS119			
D601	8-719-911-19	DIODE 1SS119			
D602	8-719-109-84	DIODE RD5.1ES-B1			
D603	8-719-200-82	DIODE 11ES2			
D604	8-719-200-82	DIODE 11ES2			
D701	8-719-109-84	DIODE RD5.1ES-B1			
D702	8-719-911-19	DIODE 1SS119			
D704	8-719-150-92	DIODE RD33ES-T1B			
D908	8-719-109-93	DIODE RD6.2ES-B2			
D909	8-719-109-93	DIODE RD6.2ES-B2			
		< FERRITE BEAD >			
FB701	1-410-397-21	FERRITE BEAD INDUCTOR			

Ref. No.	Part No.	Description	Remark
		< IC >	
IC130	8-759-481-46	IC LB1943	
IC161	8-759-637-59	IC H8/3977R-AR	
IC162	8-759-248-87	IC MM1256XF-BE	
IC163	8-759-432-32	IC ST24W02FM6TR	
IC201	8-759-562-55	IC HA118503F	
IC202	8-759-590-25	IC MSM7470-75MS-KR1	
IC203	8-759-295-66	IC BA7653AF-E2 (L86HF)	
IC340	8-759-486-92	IC LA7256 (L76HF/L86HF)	
IC360	8-759-486-64	IC TDA9615H/N1,557 (L76HF/L86HF)	
IC420	8-759-366-44	IC uPD16312GB-3B4	
IC501	8-759-352-17	IC HA118195NT	
IC600	8-759-438-18	IC PQ12RD08	
IC601	8-759-701-56	IC NJM78M05FA	
IC602	8-759-358-38	IC NJM78M05DLA (TE1)	
IC750	8-742-037-00	IC SBX1837-51 (L76HF/L86HF)	
IC901	8-759-454-62	IC uPC4558G2-E2	
		< JUMPER RESISTOR >	

JR001	1-216-295-00	METAL CHIP	0	5%	1/10W
JR002	1-216-295-00	METAL CHIP	0	5%	1/10W
JR003	1-216-295-00	METAL CHIP	0	5%	1/10W
JR004	1-216-295-00	METAL CHIP	0	5%	1/10W
JR005	1-216-295-00	METAL CHIP	0	5%	1/10W
JR006	1-216-295-00	METAL CHIP	0	5%	1/10W
JR007	1-216-295-00	METAL CHIP	0	5%	1/10W
JR008	1-216-295-00	METAL CHIP	0	5%	1/10W
JR009	1-216-295-00	METAL CHIP	0	5%	1/10W
JR010	1-216-295-00	METAL CHIP	0	5%	1/10W
JR011	1-216-295-00	METAL CHIP	0	5%	1/10W
JR012	1-216-295-00	METAL CHIP	0	5%	1/10W
JR013	1-216-295-00	METAL CHIP	0	5%	1/10W
JR014	1-216-295-00	METAL CHIP	0	5%	1/10W
JR015	1-216-295-00	METAL CHIP	0	5%	1/10W
JR016	1-216-295-00	METAL CHIP	0	5%	1/10W
JR018	1-216-295-00	METAL CHIP	0	5%	1/10W
JR019	1-216-295-00	METAL CHIP	0	5%	1/10W
JR020	1-216-295-00	METAL CHIP	0	5%	1/10W
JR021	1-216-295-00	METAL CHIP	0	5%	1/10W
JR022	1-216-295-00	METAL CHIP	0	5%	1/10W
JR023	1-216-295-00	METAL CHIP	0	5%	1/10W
JR024	1-216-295-00	METAL CHIP	0	5%	1/10W
JR025	1-216-295-00	METAL CHIP	0	5%	1/10W
JR026	1-216-295-00	METAL CHIP	0	5%	1/10W
JR027	1-216-295-00	METAL CHIP	0	5%	1/10W
JR028	1-216-295-00	METAL CHIP	0	5%	1/10W
JR029	1-216-295-00	METAL CHIP	0	5%	1/10W
JR030	1-216-295-00	METAL CHIP	0	5%	1/10W
JR031	1-216-295-00	METAL CHIP	0	5%	1/10W
JR032	1-216-295-00	METAL CHIP	0	5%	1/10W
JR033	1-216-295-00	METAL CHIP	0	5%	1/10W
JR201	1-216-296-00	METAL CHIP	0	5%	1/8W
JR202	1-216-296-00	METAL CHIP	0	5%	1/8W
JR203	1-216-296-00	METAL CHIP	0	5%	1/8W
JR204	1-216-296-00	METAL CHIP	0	5%	1/8W
JR205	1-216-296-00	METAL CHIP	0	5%	1/8W
JR206	1-216-296-00	METAL CHIP	0	5%	1/8W
JR207	1-216-296-00	METAL CHIP	0	5%	1/8W
JR208	1-216-296-00	METAL CHIP	0	5%	1/8W

Ref. No.	Part No.	Description			Remark
JR209	1-216-296-00	METAL CHIP	0	5%	1/8W
JR210	1-216-296-00	METAL CHIP	0	5%	1/8W
JR211	1-216-296-00	METAL CHIP	0	5%	1/8W
JR212	1-216-296-00	METAL CHIP	0	5%	1/8W
JR213	1-216-296-00	METAL CHIP	0	5%	1/8W
JR214	1-216-296-00	METAL CHIP	0	5%	1/8W
JR215	1-216-296-00	METAL CHIP	0	5%	1/8W
JR216	1-216-296-00	METAL CHIP	0	5%	1/8W
JR217	1-216-296-00	METAL CHIP	0	5%	1/8W
JR218	1-216-296-00	METAL CHIP	0	5%	1/8W
JR219	1-216-296-00	METAL CHIP	0	5%	1/8W
JR220	1-216-296-00	METAL CHIP	0	5%	1/8W
JR221	1-216-296-00	METAL CHIP	0	5%	1/8W
JR222	1-216-296-00	METAL CHIP	0	5%	1/8W
JR223	1-216-296-00	METAL CHIP	0	5%	1/8W
JR224	1-216-296-00	METAL CHIP	0	5%	1/8W
JR225	1-216-296-00	METAL CHIP	0	5%	1/8W
JR226	1-216-296-00	METAL CHIP	0	5%	1/8W
JR227	1-216-296-00	METAL CHIP	0	5%	1/8W
JR228	1-216-296-00	METAL CHIP	0	5%	1/8W
JR229	1-216-296-00	METAL CHIP	0	5%	1/8W
JR230	1-216-296-00	METAL CHIP	0	5%	1/8W
JR232	1-216-296-00	METAL CHIP	0	5%	1/8W
JR233	1-216-296-00	METAL CHIP	0	5%	1/8W
JR234	1-216-296-00	METAL CHIP	0	5%	1/8W
JR235	1-216-296-00	METAL CHIP	0	5%	1/8W
JR236	1-216-296-00	METAL CHIP	0	5%	1/8W
JR237	1-216-296-00	METAL CHIP	0	5%	1/8W
JR238	1-216-296-00	METAL CHIP	0	5%	1/8W
JR239	1-216-296-00	METAL CHIP	0	5%	1/8W
JR240	1-216-296-00	METAL CHIP	0	5%	1/8W
JR241	1-216-296-00	METAL CHIP	0	5%	1/8W
JR242	1-216-296-00	METAL CHIP	0	5%	1/8W
JR243	1-216-296-00	METAL CHIP	0	5%	1/8W
JR244	1-216-296-00	METAL CHIP	0	5%	1/8W
JR245	1-216-296-00	METAL CHIP	0	5%	1/8W
JR246	1-216-296-00	METAL CHIP	0	5%	1/8W
JR247	1-216-296-00	METAL CHIP	0	5%	1/8W
JR248	1-216-296-00	METAL CHIP	0	5%	1/8W
JR249	1-216-296-00	METAL CHIP	0	5%	1/8W
JR250	1-216-296-00	METAL CHIP	0	5%	1/8W
JR251	1-216-296-00	METAL CHIP	0	5%	1/8W
JR252	1-216-296-00	METAL CHIP	0	5%	1/8W
JS103	1-216-295-00	METAL CHIP	0	5%	1/10W
JS104	1-216-295-00	METAL CHIP	0	5%	1/10W
JS107	1-216-295-00	METAL CHIP	0	5%	1/10W
JS108	1-216-295-00	METAL CHIP	0	5%	1/10W
JS109	1-216-296-00	METAL CHIP	0	5%	1/8W
JS201	1-216-295-00	METAL CHIP	0	5%	1/10W (L56/L76HF)
JS202	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
JS204	1-216-295-00	METAL CHIP	0	5%	1/10W
JS302	1-216-295-00	METAL CHIP	0	5%	1/10W (L56)
JS304	1-216-295-00	METAL CHIP	0	5%	1/10W (L76HF/L86HF)
JS308	1-216-295-00	METAL CHIP	0	5%	1/10W
JS309	1-216-295-00	METAL CHIP	0	5%	1/10W
JS360	1-216-296-00	METAL CHIP	0	5%	1/8W
JS364	1-216-296-00	METAL CHIP	0	5%	1/8W (L56)

Ref. No.	Part No.	Description			Remark
JS400	1-216-295-00	METAL CHIP	0	5%	1/10W
JS401	1-216-295-00	METAL CHIP	0	5%	1/10W
JS404	1-216-295-00	METAL CHIP	0	5%	1/10W
JS603	1-216-296-00	METAL CHIP	0	5%	1/8W
JS604	1-216-296-00	METAL CHIP	0	5%	1/8W
JS705	1-216-296-00	METAL CHIP	0	5%	1/8W
JS707	1-216-296-00	METAL CHIP	0	5%	1/8W
JS708	1-216-295-00	METAL CHIP	0	5%	1/10W
JS709	1-216-296-00	METAL CHIP	0	5%	1/8W
JS713	1-216-295-00	METAL CHIP	0	5%	1/10W
JS716	1-216-296-00	METAL CHIP	0	5%	1/8W (L76HF/L86HF)
JS719	1-216-295-00	METAL CHIP	0	5%	1/10W (L56)
JS752	1-216-295-00	METAL CHIP	0	5%	1/10W (L76HF/L86HF)
JS754	1-216-295-00	METAL CHIP	0	5%	1/10W (L76HF/L86HF)
JS756	1-216-075-00	METAL CHIP	12K	5%	1/10W (L76HF/L86HF)
JS900	1-216-295-00	METAL CHIP	0	5%	1/10W

< COIL >

L166	1-410-513-11	INDUCTOR	22uH
L167	1-410-501-11	INDUCTOR	2.2uH
L168	1-410-513-11	INDUCTOR	22uH
L203	1-410-525-11	INDUCTOR	220uH
L204	1-410-501-11	INDUCTOR	2.2uH
L205	1-410-510-11	INDUCTOR	12uH
L206	1-410-520-11	INDUCTOR	82uH
L207	1-410-509-11	INDUCTOR	10uH
L209	1-410-521-11	INDUCTOR	100uH
L211	1-414-939-21	INDUCTOR	68uH
L212	1-410-521-11	INDUCTOR	100uH
L213	1-410-525-11	INDUCTOR	220uH
L301	1-412-092-11	INDUCTOR	22mH
L302	1-410-456-21	INDUCTOR	12mH
L303	1-410-687-11	INDUCTOR	1.2mH
L330	1-410-120-11	INDUCTOR	1.2mH (L76HF/L86HF)
L341	1-414-940-21	INDUCTOR	100uH (L76HF/L86HF)
L400	1-410-511-11	INDUCTOR	15uH
L401	1-410-513-11	INDUCTOR	22uH
L501	1-414-940-21	INDUCTOR	100uH
L502	1-414-940-21	INDUCTOR	100uH
L600	1-414-938-21	INDUCTOR	47uH
L601	1-410-509-11	INDUCTOR	10uH
L602	1-410-513-11	INDUCTOR	22uH
L701	1-410-501-11	INDUCTOR	2.2uH
L703	1-410-501-11	INDUCTOR	2.2uH
L704	1-410-501-11	INDUCTOR	2.2uH
L706	1-414-938-21	INDUCTOR	47uH
L751	1-410-509-11	INDUCTOR	10uH (L76HF/L86HF)

< FLUORECENT INDICATOR >

ND420	1-517-734-11	TUBE, FLUORESCENT INDICATOR

< PHOTO INTERRUPTER >

PH100	8-749-013-23	PHOTO INTERRUPTER GP3S120
PH101	8-749-013-23	PHOTO INTERRUPTER GP3S120

Ref. No.	Part No.	Description			Remark
		< IC LINK >			
⚠PS100	1-533-586-31	LINK, IC			
⚠PS301	1-533-586-31	LINK, IC			
⚠PS600	1-533-593-11	LINK, IC			
⚠PS601	1-533-586-31	LINK, IC			
		< TRANSISTOR >			
Q100	8-729-043-84	TRANSISTOR	PT380F3		
Q101	8-729-043-84	TRANSISTOR	PT380F3		
Q102	8-729-281-53	TRANSISTOR	2SC1815-GR		
Q103	8-729-010-29	TRANSISTOR	MSD601-RST1		
Q104	8-729-421-22	TRANSISTOR	UN2211		
Q105	8-729-010-29	TRANSISTOR	MSD601-RST1 (L76HF/L86HF)		
Q201	8-729-421-19	TRANSISTOR	UN2213		
Q202	8-729-901-06	TRANSISTOR	DTA144EK		
Q203	8-729-424-46	TRANSISTOR	UN211E		
Q204	8-729-421-19	TRANSISTOR	UN2213		
Q205	8-729-421-19	TRANSISTOR	UN2213		
Q206	8-729-421-19	TRANSISTOR	UN2213		
Q207	8-729-421-19	TRANSISTOR	UN2213		
Q208	8-729-010-29	TRANSISTOR	MSD601-RST1		
Q209	8-729-010-29	TRANSISTOR	MSD601-RST1		
Q210	8-729-421-19	TRANSISTOR	UN2213		
Q211	8-729-421-19	TRANSISTOR	UN2213		
Q300	8-729-421-19	TRANSISTOR	UN2213		
Q301	8-729-010-29	TRANSISTOR	MSD601-RST1		
Q302	8-729-010-29	TRANSISTOR	MSD601-RST1		
Q303	8-729-901-06	TRANSISTOR	DTA144EK		
Q305	8-729-012-31	TRANSISTOR	2SC4040-TL2-Q		
Q307	8-729-900-51	TRANSISTOR	DTA114TK		
Q308	8-729-421-19	TRANSISTOR	UN2213		
Q309	8-729-421-19	TRANSISTOR	UN2213		
Q310	8-729-900-51	TRANSISTOR	DTA114TK		
Q311	8-729-421-19	TRANSISTOR	UN2213		
Q312	8-729-010-29	TRANSISTOR	MSD601-RST1		
Q330	8-729-012-31	TRANSISTOR	2SC4040-TL2-Q		(L76HF/L86HF)
Q331	8-729-900-51	TRANSISTOR	DTA114TK (L76HF/L86HF)		
Q332	8-729-010-29	TRANSISTOR	MSD601-RST1		
Q400	8-729-010-05	TRANSISTOR	MSB709-RT1		
Q402	8-729-421-22	TRANSISTOR	UN2211		
Q501	8-729-230-49	TRANSISTOR	2SC2712-G		
Q600	8-729-140-93	TRANSISTOR	2SB733-34		
Q601	8-729-421-22	TRANSISTOR	UN2211		
Q602	8-729-018-99	TRANSISTOR	2SD2394-F		
Q603	8-729-119-79	TRANSISTOR	2SC2785-FEK		
Q701	8-729-106-68	TRANSISTOR	2SD1615A-GP		
Q754	8-729-421-19	TRANSISTOR	UN2213 (L76HF/L86HF)		
Q901	8-729-010-05	TRANSISTOR	MSB709-RT1		
		< RESISTOR >			
R100	1-216-089-00	METAL CHIP	47K	5%	1/10W
R101	1-216-041-00	METAL CHIP	470	5%	1/10W
R102	1-249-437-11	CARBON	47K	5%	1/4W
R103	1-216-085-00	METAL CHIP	33K	5%	1/10W
R104	1-216-085-00	METAL CHIP	33K	5%	1/10W
R105	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R106	1-249-417-11	CARBON	1K	5%	1/4W
R107	1-249-400-11	CARBON	39	5%	1/4W
R108	1-249-400-11	CARBON	39	5%	1/4W
R109	1-247-807-31	CARBON	100	5%	1/4W
R110	1-216-051-00	METAL CHIP	1.2K	5%	1/10W
R111	1-216-073-00	METAL CHIP	10K	5%	1/10W
R112	1-216-073-00	METAL CHIP	10K	5%	1/10W
R113	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R114	1-216-049-00	METAL CHIP	1K	5%	1/10W
R115	1-216-049-00	METAL CHIP	1K	5%	1/10W
R116	1-247-863-91	CARBON	22K	5%	1/4W
R117	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R118	1-216-049-00	METAL CHIP	1K	5%	1/10W
R119	1-216-073-00	METAL CHIP	10K	5%	1/10W
R120	1-216-049-00	METAL CHIP	1K	5%	1/10W
R121	1-216-103-00	METAL CHIP	180K	5%	1/10W
R122	1-216-049-00	METAL CHIP	1K	5%	1/10W
R123	1-216-121-91	RES,CHIP	1M	5%	1/10W
R124	1-216-037-00	METAL CHIP	330	5%	1/10W
R125	1-216-037-00	METAL CHIP	330	5%	1/10W
R126	1-216-051-00	METAL CHIP	1.2K	5%	1/10W (L76HF)
R126	1-216-073-00	METAL CHIP	10K	5%	1/10W (L86HF)
R127	1-216-073-00	METAL CHIP	10K	5%	1/10W
R129	1-216-049-00	METAL CHIP	1K	5%	1/10W
R130	1-216-085-00	METAL CHIP	33K	5%	1/10W
R131	1-216-085-00	METAL CHIP	33K	5%	1/10W
R132	1-216-089-00	METAL CHIP	47K	5%	1/10W
R133	1-249-429-11	CARBON	10K	5%	1/4W
R134	1-249-429-11	CARBON	10K	5%	1/4W
R135	1-216-049-00	METAL CHIP	1K	5%	1/10W
R136	1-216-103-00	METAL CHIP	180K	5%	1/10W
R137	1-216-089-00	METAL CHIP	47K	5%	1/10W (L76HF/L86HF)
R138	1-249-413-11	CARBON	470	5%	1/4W
R139	1-249-413-11	CARBON	470	5%	1/4W
R140	1-249-413-11	CARBON	470	5%	1/4W
R141	1-216-073-00	METAL CHIP	10K	5%	1/10W
R143	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R146	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R147	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R148	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R149	1-216-091-00	METAL CHIP	56K	5%	1/10W
R151	1-216-073-00	METAL CHIP	10K	5%	1/10W
R152	1-216-021-00	METAL CHIP	68	5%	1/10W
R153	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R154	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R155	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R156	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R157	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R159	1-216-073-00	METAL CHIP	10K	5%	1/10W
R160	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R161	1-216-073-00	METAL CHIP	10K	5%	1/10W
R162	1-216-049-00	METAL CHIP	1K	5%	1/10W
R163	1-216-073-00	METAL CHIP	10K	5%	1/10W
R164	1-216-049-00	METAL CHIP	1K	5%	1/10W
R169	1-249-417-11	CARBON	1K	5%	1/4W

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description			Remark
R170	1-216-121-91	RES,CHIP	1M	5%	1/10W
R171	1-216-049-00	METAL CHIP	1K	5%	1/10W
R172	1-249-417-11	CARBON	1K	5%	1/4W
R173	1-249-417-11	CARBON	1K	5%	1/4W
R174	1-216-081-00	METAL CHIP	22K	5%	1/10W
R175	1-216-113-00	METAL CHIP	470K	5%	1/10W
R176	1-216-089-00	METAL CHIP	47K	5%	1/10W
R177	1-216-105-91	RES,CHIP	220K	5%	1/10W
R178	1-216-089-00	METAL CHIP	47K	5%	1/10W
R179	1-216-089-00	METAL CHIP	47K	5%	1/10W
R180	1-216-089-00	METAL CHIP	47K	5%	1/10W
R181	1-249-413-11	CARBON	470	5%	1/4W
R183	1-249-413-11	CARBON	470	5%	1/4W
R186	1-216-049-00	METAL CHIP	1K	5%	1/10W
R187	1-216-049-00	METAL CHIP	1K	5%	1/10W
R188	1-249-417-11	CARBON	1K	5%	1/4W
R189	1-216-041-00	METAL CHIP	470	5%	1/10W
R191	1-216-089-00	METAL CHIP	47K	5%	1/10W
R192	1-216-089-00	METAL CHIP	47K	5%	1/10W
R198	1-216-089-00	METAL CHIP	47K	5%	1/10W
R199	1-249-413-11	CARBON	470	5%	1/4W
R201	1-216-083-00	METAL CHIP	27K	5%	1/10W
R202	1-216-129-00	METAL CHIP	2.2M	5%	1/10W
R203	1-249-438-11	CARBON	56K	5%	1/4W
R204	1-216-041-00	METAL CHIP	470	5%	1/10W
R205	1-247-887-00	CARBON	220K	5%	1/4W
R206	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R207	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R208	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R209	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R210	1-216-049-00	METAL CHIP	1K	5%	1/10W
R211	1-247-807-31	CARBON	100	5%	1/4W
R212	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R214	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R215	1-259-880-11	CARBON	2.2M	5%	1/4W
R216	1-216-089-00	METAL CHIP	47K	5%	1/10W
R217	1-216-089-00	METAL CHIP	47K	5%	1/10W
R218	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R219	1-216-089-00	METAL CHIP	47K	5%	1/10W
R220	1-216-089-00	METAL CHIP	47K	5%	1/10W
R221	1-247-807-31	CARBON	100	5%	1/4W
R222	1-216-041-00	METAL CHIP	470	5%	1/10W
R223	1-216-295-00	METAL CHIP	0	5%	1/10W
R224	1-216-073-00	METAL CHIP	10K	5%	1/10W
R225	1-249-417-11	CARBON	1K	5%	1/4W
R226	1-216-295-00	METAL CHIP	0	5%	1/10W
R227	1-216-295-00	METAL CHIP	0	5%	1/10W
R229	1-216-073-00	METAL CHIP	10K	5%	1/10W
R230	1-216-081-00	METAL CHIP	22K	5%	1/10W
R231	1-216-049-00	METAL CHIP	1K	5%	1/10W
R232	1-216-041-00	METAL CHIP	470	5%	1/10W
R234	1-216-041-00	METAL CHIP	470	5%	1/10W (L86HF)
R235	1-249-413-11	CARBON	470	5%	1/4W
R236	1-247-863-91	CARBON	22K	5%	1/4W
R237	1-216-105-91	RES,CHIP	220K	5%	1/10W
R238	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R240	1-216-041-00	METAL CHIP	470	5%	1/10W
R241	1-249-421-11	CARBON	2.2K	5%	1/4W
R242	1-216-113-00	METAL CHIP	470K	5%	1/10W

Ref. No.	Part No.	Description			Remark
R243	1-216-049-00	METAL CHIP	1K	5%	1/10W
R301	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R302	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R303	1-216-083-00	METAL CHIP	27K	5%	1/10W
R304	1-216-089-00	METAL CHIP	47K	5%	1/10W (L56)
R304	1-216-097-91	RES,CHIP	100K	5%	1/10W (L76HF/L86HF)
R305	1-216-073-00	METAL CHIP	10K	5%	1/10W
R306	1-216-047-91	RES,CHIP	820	5%	1/10W
R307	1-216-047-91	RES,CHIP	820	5%	1/10W
R308	1-216-089-00	METAL CHIP	47K	5%	1/10W
R310	1-216-035-00	METAL CHIP	270	5%	1/10W
R311	1-249-428-11	CARBON	8.2K	5%	1/4W
R312	1-216-081-00	METAL CHIP	22K	5%	1/10W
R313	1-216-109-00	METAL CHIP	330K	5%	1/10W
R314	1-216-071-00	METAL CHIP	8.2K	5%	1/10W
R315	1-249-389-11	CARBON	4.7	5%	1/4W F (L56)
R315	1-249-395-11	CARBON	15	5%	1/4W F (L76HF/L86HF)
R316	1-216-295-00	METAL CHIP	0	5%	1/10W
R317	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R318	1-216-689-11	METAL CHIP	39K	0.5%	1/10W
R319	1-216-041-00	METAL CHIP	470	5%	1/10W
R320	1-216-073-00	METAL CHIP	10K	5%	1/10W
R321	1-216-073-00	METAL CHIP	10K	5%	1/10W
R322	1-216-097-91	RES,CHIP	100K	5%	1/10W
R323	1-216-097-91	RES,CHIP	100K	5%	1/10W
R326	1-249-429-11	CARBON	10K	5%	1/4W
R327	1-216-073-00	METAL CHIP	10K	5%	1/10W
R328	1-216-047-91	RES,CHIP	820	5%	1/10W
R329	1-216-073-00	METAL CHIP	10K	5%	1/10W
R330	1-216-083-00	METAL CHIP	27K	5%	1/10W (L76HF/L86HF)
R331	1-216-295-00	METAL CHIP	0	5%	1/10W (L76HF/L86HF)
R332	1-249-394-11	CARBON	12	5%	1/4W F (L76HF/L86HF)
R333	1-216-049-00	METAL CHIP	1K	5%	1/10W
R334	1-216-049-00	METAL CHIP	1K	5%	1/10W
R335	1-216-073-00	METAL CHIP	10K	5%	1/10W
R336	1-249-413-11	CARBON	470	5%	1/4W
R344	1-216-055-00	METAL CHIP	1.8K	5%	1/10W (L76HF/L86HF)
R345	1-216-081-00	METAL CHIP	22K	5%	1/10W (L76HF/L86HF)
R346	1-216-065-00	METAL CHIP	4.7K	5%	1/10W (L76HF/L86HF)
R347	1-216-065-00	METAL CHIP	4.7K	5%	1/10W (L76HF/L86HF)
R348	1-216-033-00	METAL CHIP	220	5%	1/10W (L76HF/L86HF)
R360	1-216-049-00	METAL CHIP	1K	5%	1/10W (L76HF/L86HF)
R361	1-216-049-00	METAL CHIP	1K	5%	1/10W (L76HF/L86HF)
R362	1-216-295-00	METAL CHIP	0	5%	1/10W (L76HF/L86HF)
R368	1-216-133-00	METAL CHIP	3.3M	5%	1/10W (L76HF/L86HF)
R370	1-216-065-00	METAL CHIP	4.7K	5%	1/10W (L76HF/L86HF)

Ref. No.	Part No.	Description			Remark
R371	1-216-689-11	METAL CHIP	39K	0.5%	1/10W (L76HF/L86HF)
R372	1-216-065-00	METAL CHIP	4.7K	5%	1/10W (L76HF/L86HF)
R378	1-216-083-00	METAL CHIP	27K	5%	1/10W (L76HF/L86HF)
R380	1-216-041-00	METAL CHIP	470	5%	1/10W (L76HF/L86HF)
R381	1-216-041-00	METAL CHIP	470	5%	1/10W (L76HF/L86HF)
R382	1-216-041-00	METAL CHIP	470	5%	1/10W (L76HF/L86HF)
R383	1-216-041-00	METAL CHIP	470	5%	1/10W (L76HF/L86HF)
R384	1-216-091-00	METAL CHIP	56K	5%	1/10W (L76HF/L86HF)
R385	1-216-091-00	METAL CHIP	56K	5%	1/10W (L76HF/L86HF)
R389	1-216-073-00	METAL CHIP	10K	5%	1/10W (L76HF/L86HF)
R400	1-216-113-00	METAL CHIP	470K	5%	1/10W
R401	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R402	1-216-049-00	METAL CHIP	1K	5%	1/10W
R403	1-216-041-00	METAL CHIP	470	5%	1/10W
R405	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R406	1-216-041-00	METAL CHIP	470	5%	1/10W
R407	1-216-295-00	METAL CHIP	0	5%	1/10W
R408	1-247-807-31	CARBON	100	5%	1/4W
R410	1-216-103-00	METAL CHIP	180K	5%	1/10W
R411	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R412	1-249-425-11	CARBON	4.7K	5%	1/4W
R414	1-216-121-91	RES,CHIP	1M	5%	1/10W
R421	1-216-049-00	METAL CHIP	1K	5%	1/10W
R422	1-216-049-00	METAL CHIP	1K	5%	1/10W
R423	1-216-049-00	METAL CHIP	1K	5%	1/10W
R424	1-216-049-00	METAL CHIP	1K	5%	1/10W
R425	1-216-085-00	METAL CHIP	33K	5%	1/10W
R426	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R427	1-216-041-00	METAL CHIP	470	5%	1/10W
R428	1-216-041-00	METAL CHIP	470	5%	1/10W
R429	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R501	1-216-037-00	METAL CHIP	330	5%	1/10W
R502	1-216-037-00	METAL CHIP	330	5%	1/10W
R503	1-216-295-00	METAL CHIP	0	5%	1/10W
R504	1-216-295-00	METAL CHIP	0	5%	1/10W
R505	1-216-295-00	METAL CHIP	0	5%	1/10W
R506	1-216-295-00	METAL CHIP	0	5%	1/10W
R507	1-216-053-00	METAL CHIP	1.5K	5%	1/10W
R508	1-216-049-00	METAL CHIP	1K	5%	1/10W
R509	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R510	1-216-073-00	METAL CHIP	10K	5%	1/10W
R511	1-216-081-00	METAL CHIP	22K	5%	1/10W
R512	1-216-081-00	METAL CHIP	22K	5%	1/10W
R513	1-216-049-00	METAL CHIP	1K	5%	1/10W
R514	1-216-077-00	METAL CHIP	15K	5%	1/10W
R515	1-216-077-00	METAL CHIP	15K	5%	1/10W
R516	1-216-073-00	METAL CHIP	10K	5%	1/10W
R517	1-216-073-00	METAL CHIP	10K	5%	1/10W
R600	1-249-417-11	CARBON	1K	5%	1/4W
R601	1-216-430-11	METAL OXIDE	390	5%	1W F
R602	1-249-417-11	CARBON	1K	5%	1/4W
R603	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R604	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R605	1-249-414-11	CARBON	560	5%	1/4W
R606	1-247-815-91	CARBON	220	5%	1/4W
R607	1-247-815-91	CARBON	220	5%	1/4W
R608	1-216-471-11	METAL OXIDE	27	5%	3W
R609	1-215-857-11	METAL OXIDE	10	5%	1W F
R610	1-249-417-11	CARBON	1K	5%	1/4W
R703	1-216-049-00	METAL CHIP	1K	5%	1/10W
R704	1-216-049-00	METAL CHIP	1K	5%	1/10W
R705	1-249-417-11	CARBON	1K	5%	1/4W
R706	1-216-065-00	METAL CHIP	4.7K	5%	1/10W
R707	1-212-893-00	FUSIBLE	330	5%	1/4W F
R708	1-216-113-00	METAL CHIP	470K	5%	1/10W
R709	1-216-295-00	METAL CHIP	0	5%	1/10W
R710	1-216-295-00	METAL CHIP	0	5%	1/10W
R711	1-216-295-00	METAL CHIP	0	5%	1/10W
R712	1-216-295-00	METAL CHIP	0	5%	1/10W
R713	1-216-295-00	METAL CHIP	0	5%	1/10W
R714	1-216-295-00	METAL CHIP	0	5%	1/10W
R752	1-216-295-00	METAL CHIP	0	5%	1/10W (L76HF/L86HF)
R753	1-216-081-00	METAL CHIP	22K	5%	1/10W (L76HF/L86HF)
R754	1-216-081-00	METAL CHIP	22K	5%	1/10W (L76HF/L86HF)
R757	1-216-073-00	METAL CHIP	10K	5%	1/10W (L76HF/L86HF)
R758	1-216-295-00	METAL CHIP	0	5%	1/10W (L56)
R759	1-216-041-00	METAL CHIP	470	5%	1/10W (L76HF/L86HF)
R760	1-216-073-00	METAL CHIP	10K	5%	1/10W (L76HF/L86HF)
R901	1-216-021-00	METAL CHIP	68	5%	1/10W
R902	1-249-407-11	CARBON	150	5%	1/4W
R904	1-249-408-11	CARBON	180	5%	1/4W
R905	1-216-025-91	RES,CHIP	100	5%	1/10W
R906	1-216-021-00	METAL CHIP	68	5%	1/10W
R907	1-216-041-00	METAL CHIP	470	5%	1/10W
R908	1-216-041-00	METAL CHIP	470	5%	1/10W (L76HF/L86HF)
R909	1-216-097-91	RES,CHIP	100K	5%	1/10W
R910	1-216-097-91	RES,CHIP	100K	5%	1/10W (L76HF/L86HF)
R911	1-216-097-91	RES,CHIP	100K	5%	1/10W (L76HF/L86HF)
R912	1-216-097-91	RES,CHIP	100K	5%	1/10W
R927	1-216-295-00	METAL CHIP	0	5%	1/10W

< VARIABLE RESISTOR >

RV750	1-241-766-11	RES, ADJ, CERMET 47K (L76HF/L86HF)

< SWITCH >

S100	1-771-155-11	SWITCH, ROTARY (CAM ENCODER)
S101	1-762-108-11	SWITCH, PUSH (1 KEY) (REC PROOF)
S112	1-692-431-21	SWITCH, TACTILE (ONE TOUCH TUNING)
S113	1-692-431-21	SWITCH, TACTILE (SP/LP (SP/EP))
S115	1-571-588-11	SWITCH, SLIDE (NTSC PB)
S116	1-692-431-21	SWITCH, TACTILE (CHANNEL/TRACKING +)
S117	1-692-431-21	SWITCH, TACTILE (EASY TIMER)
S118	1-692-431-21	SWITCH, TACTILE (COLOR SYSTEM)

Ref. No.	Part No.	Description	Remark
S119	1-692-431-21	SWITCH, TACTILE (CHANNEL/TRACKING -)	
S701	1-571-588-11	SWITCH, SLIDE (RF UNIT)	
		< TRANSFORMER >	
T301	1-423-413-11	TRANSFORMER, BIAS OSCILLATION	(L76HF/L86HF)
T301	1-423-414-11	TRANSFORMER, BIAS OSCILLATION (L56)	
T302	1-423-415-11	TRANSFORMER, BIAS OSCILLATION	(L76HF/L86HF)
		< TUNER >	
TU701	1-693-370-11	TUNER, RF IF (VHF/UHF)	
		< VIBRATOR >	
X161	1-767-855-11	VIBRATOR, CRYSTAL (10MHz)	
X162	1-579-463-11	VIBRATOR, CRYSTAL (32.768kHz)	
* X201	1-760-709-11	VIBRATOR, CRYSTAL (3.579545MHz)	
X202	1-781-577-11	VIBRATOR, CRYSTAL (3.582056MHz)	
X401	1-767-856-11	VIBRATOR, CRYSTAL (17.734475MHz)	

*	A-6791-575-A	MF-312 BOARD, COMPLETE (L56/L76HF)			
*	A-6791-589-A	MF-312 BOARD, COMPLETE (L86HF)			
		**********			(Ref.No. 2,000 Series)
		< CAPACITOR >			
C401	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C481	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V (L86HF)
C491	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V (L86HF)
C493	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V (L86HF)
		< CONNECTOR >			
CN407	1-506-484-11	PIN, CONNECTOR 5P (L86HF)			
CN408	1-691-064-31	HOUSING, CONNECTOR 5P			
		< DIODE >			
D405	8-719-056-07	DIODE SLR-342MCT31 (POWER)			
D480	8-719-109-93	DIODE RD6.2ES-B2 (L86HF)			
D481	8-719-108-12	DIODE RD9.1E-W (L86HF)			
D490	8-719-108-12	DIODE RD9.1E-W (L86HF)			
D491	8-719-108-12	DIODE RD9.1E-W (L86HF)			
		< IC >			
IC401	8-749-011-05	IC GP1U28X			
		< JACK >			
J481	1-766-861-11	JACK, PIN (3P) (LINE-2 IN) (L86HF)			
		< JUMPER RESISTOR >			
JR400	1-216-296-00	METAL CHIP	0	5%	1/8W
JR401	1-216-296-00	METAL CHIP	0	5%	1/8W (L86HF)
JS494	1-216-295-00	METAL CHIP	0	5%	1/10W (L86HF)

Ref. No.	Part No.	Description			Remark
		< RESISTOR >			
R401	1-216-029-00	METAL CHIP	150	5%	1/10W
R402	1-216-295-00	METAL CHIP	0	5%	1/10W
R403	1-216-295-00	METAL CHIP	0	5%	1/10W
R480	1-216-022-00	METAL CHIP	75	5%	1/10W (L86HF)
R490	1-216-295-00	METAL CHIP	0	5%	1/10W (L86HF)
R491	1-216-295-00	METAL CHIP	0	5%	1/10W (L86HF)
		< SWITCH >			
S403	1-762-196-21	SWITCH, TACT (I/⏻)			

	1-468-312-22	POWER BLOCK (HS-921SF1) (L56)			
		**********			(Ref.No. 3,000 Series)
		< CAPACITOR >			
⚠C101	1-115-165-11	FILM	0.1uF		250V
⚠C102	1-115-165-11	FILM	0.1uF		250V
⚠C108	9-980-012-01	ELECT	150uF		450V
C207	1-126-964-11	ELECT	10uF		50V
C401	1-126-967-11	ELECT	47uF		50V
		< DIODE >			
⚠D102	8-719-312-16	DIODE EG01			
⚠D104	8-719-026-52	DIODE 10ELS2			
⚠D106	8-719-100-30	DIODE RD12ES			
⚠D201	8-719-018-83	DIODE D2S4M			
⚠D401	8-719-052-89	DIODE D1NL40			
⚠D501	8-719-026-52	DIODE 10ELS2			
		< FUSE >			
⚠F101	1-532-388-31	FUSE (2.0A/250V)			
		< IC >			
⚠IC101	9-939-634-01	IC MIP-164			
⚠IC201	8-759-420-19	IC AN1431T			
		< PHOTO COUPLER >			
⚠PC101	8-749-924-84	COUPLER, PHOTO PS2561			

	1-468-311-21	POWER BLOCK (SR-708) (L76HF/L86HF)			
		**********			(Ref.No. 4,000 Series)
		< CAPACITOR >			
C112	1-130-495-51	FILM	0.1uF		50V
C114	1-130-495-51	FILM	0.1uF		50V
C115	1-130-495-51	FILM	0.1uF		50V
		< DIODE >			
⚠D107	9-900-534-01	DIODE ERA18-02			
⚠D108	9-900-534-01	DIODE ERA18-02			

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
⚠D205	9-900-534-01	DIODE ERA18-02	
		< FUSE >	
⚠F101	1-532-388-31	FUSE (2.0A/250V)	
		< IC >	
⚠IC201	8-759-420-19	IC AN1431T	
		< PHOTO COUPLER >	
⚠PC101	8-749-924-84	COUPLER, PHOTO PS2561	
		< RESISTOR >	
R208	9-908-233-01	FUSIBLE 0.47	1/4W
		MISCELLANEOUS	
		**********	
3	1-762-844-21	SWITCH, ROTARY	
11	1-783-569-11	CABLE, FLAT (FDM-4)	
14	1-783-568-11	CABLE, FLAT (FMF-23)	
⚠57	1-791-157-11	CORD, POWER	
704	1-500-144-11	HEAD, FE	
768	8-839-037-04	DRUM ASSY, DZH-74E/Z-RP (L56)	
768	8-839-045-02	DRUM ASSY, DZH-95A/Z-RP (L76HF/L86HF)	
M902	1-698-971-11	MOTOR, DC (CAPSTAN)	
M903	X-3947-577-1	MOTOR ASSY, CAM	
		**********	
		HARDWARE LIST	
		**********	
#1	7-685-648-79	SCREW +BVTP 3X12 TYPE2 IT-3	
#2	7-682-147-01	SCREW +P 3X6	
#3	7-685-646-79	SCREW +BVTP 3X8 TYPE2 IT-3	
#4	7-685-133-19	SCREW (DIA. 2.6) (IT3B)	
		ACCESSORIES & PACKING MATERIALS	
		**********	
	1-418-550-11	COMMANDER, STANDARD (RMT-V247E) (L56)	
	1-418-550-21	COMMANDER, STANDARD (RMT-V247F) (L76HF, L86HF)	
	1-696-592-11	CORD, CONNECTION (NTSC) (1.5m) (L56, L76HF)	
	1-696-593-11	CORD, CONNECTION (PAL) (1.5m) (L86HF)	
	3-709-133-11	COVER, BATTERY (for RMT-V247E/V247F)	
	3-866-973-11	MANUAL, INSTRUCTION (SPANISH)	
*	3-987-421-01	CUSHION	

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Replace only with part number specified.

9-921-725-11

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Home Video Company
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